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ABSTRACT

This combination curriculum guide and resource book was developed in response to recommendations made by the instructors who attended the Women in Trades and Technology (WITT) conference of June 1986. It assists in the design and delivery of exploratory trade and technology courses that are responsive to the special needs of women learners throughout British Columbia. Part 1 is an overview that explains the following: the guide's organization, purpose, and rationale; program goals and objectives; and assessment and evaluation methods. The following topics related to using the guide are discussed in Part 2: course design; sequencing; preparing for the program; objectives of hands-on components; teaching and assessment strategies; ordering and using media resources; and related programs and publications. Part 3 is devoted to the three course units, which cover the following topics: personal and professional development skills (personal growth and development, women and work, survival skills); work-related skills (health and safety, academic skills, hands-on trades and technology skills, work experience placements); and career development (career options and decision making, functioning in the workplace, rights and obligations). Appended are national generic standards and program development guidelines for Women in Trades and Technology courses; for exploratory courses for women

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in trades, technology, operations and blue-collar work; and for trade/technology-specific courses for women. (MN)

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a Curriculum Guide and Resource Book with Special Emphasis on the Needs of Women

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Orientation to Trades and Technology

A Curriculum Guide and Resource Book with Special Emphasis on the Needs of Women

by Marcia Braundy
Journeywomen Ventures Ltd.

Revised for the
Province of British Columbia
Ministry of Education, Skills and Training
and the Centre for Curriculum, Transfer and Technology
with support and assistance from the WITT National Network
1997

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Preface

This curriculum guide was originally developed in response to recommendations made by the instructors who attended the Women in Trades and Technology conference in Prince George in June 1986. The instructors recommended that the curriculum guide be flexible enough to respond to the needs of a wide variety of learners and geographic areas and that it identify the key elements necessary to all programs for Women in Trades and Technology. It has been revised to meet the National Standards for Exploratory Courses in Trades and Technology for Women developed by WITT National Network. The revisions also reflect changes in technology, and the use of instructional technology by learners and instructors in the delivery of the program.

The ministry contracted the revision to Marcia Braundy of Journeywomen Ventures Ltd., the original author. She was assisted by both a provincial and national advisory committee. Ms. Braundy is a university educated journeylevel carpenter who has been involved in Apprenticeship and women's employment and training issues both nationally and provincially. She has developed and taught Women in Trades and Women in Trades and Technology courses in British Columbia at Selkirk College, Nelson, and the College of New Caledonia, Prince George.

Acknowledgments

The original 1987 committee, established by the British Columbia Ministry of Advanced Education and Job Training, advised on the scope and format of the guide and reviewed prepared materials, to create this unique resource. We are indebted to the original project team: Marcia Braundy, College of New Caledonia; Mark Creighton, Ministry of Social Services and Housing; Etta Connors, Camosun College; Linda Coyle, Kwantlen University College; Kirk Gable, College of New Caledonia; Sandra Malloy, Women's Secretariat, Ministry of Advanced Education and Job Training; Joan Mason, Ministry of Advanced Education and Job Training; Heather Watt, Vancouver Women in Trades; and Roberta Taylor, East Kootenay Community College. Thanks also go to the College of New Caledonia Advisory Committee for their support, including Kathy Conroy, Paul Ramsey, and Liz Ritch.

The 1997 Project Committee advised on the revision process and on the inclusion of new material, which enables *Orientation to Trades and Technology* to meet the national standards. Members of the BC Committee included: Linda Coyle, Kwantlen University College; Priti Shah, Drishti Consulting; Christine Baker, Salishan Pathways Human Resources Society; Deanna Rexe, Public Consulting Group, BC; Shirley Holloway, Dean of Trades and Technology, and Joyce Van De Vegte, Camosun College; and the author, Marcia Braundy, Journeywomen Ventures Ltd. The national committee included: Valerie Overend, SIAST; Brenda Grzetic, WITT Newfoundland; Maggie McDonald and Ingrid Bron, WITT National Network; and Danuszia Mordasciewicz, Human Resources Development Canada. The Project Committee was ably assisted by Dennis Anderson, Centre for Curriculum, Transfer and Technology, and Jean Campbell and Susan McGregor, BC Ministry of Education, Skills and Training.

Thanks to those who gave so generously of their time and ideas: Susan Booth, BRIDGES author, who along with Dr. Carol Brooks, from Quinta Consulting in London, Ontario, wrote the first Women in Trades and Technology program and completed the original research on relational learning with women and men in trades and technology; Caitlin Macart and Cindy Hale of the Splinter Group, Powell River, BC - tradeswomen, technicians, and teachers; Mary Gillies and Connie Schmidt, successful technologists who were very willing and able to share their skills; the Toronto YWCA Life Skills Division, for the wonderful resources they have created; Elaine Bernard, machinist turned techno-interpreter with little time and a commitment to share it; Joan Connors, College of New Caledonia, who makes math accessible; Patti Schom-Moffatt, a technical consultant with a commitment to women's training; Moira Gutteridge, University College of the Fraser Valley, who has a great pre-technology program; Linda Breault, at University College of the Cariboo; the library staff at the College of New Caledonia and Selkirk College for their patience and assistance; Tom Sawtell, Developmental Studies at CNC; Patricia Miller and Mary Ann Kenney at the Canadian Council for Human Resources in the Environment Industry; the International Technology Education Association for sharing their resources; Linda Coyle, Joan McArthur-Blair, Sandy Berman and Adrienne Montani for their excellent work work on gender, diversity and life management skills; Christine Zimmerman and Laurie Jorgenson for review and feedback; Kate Braid for her incisive analysis of gender issues in trades and her generosity in sharing it; Mildred Minty, a pioneer in providing diversity training for apprenticeship counsellors and instuctors; Gay Kiesling of the Renton, Washington ANEW program: pioneers in the field of TTO training for women; Kootenay WITT for sharing their excellent resources; Alice Macpherson, Kwantlen University College, for her efforts in reviewing the material in this book; and Susan Webber, Advanced Education Media Acquisition Centre for the wonderful assistance provided in identifying audio/visual materials and their sources. You were all needed.

Special thanks should go to Linda Coyle, Deanna Rexe, Brenda Greztic and Valerie Overend for the active and ongoing support and provision of additional resource materials and ideas; and to Gordon Thorne at GT Publishing for his clarity, enthusiasm, encouragement and proclivity for the "bon mot," as well as his vision and understanding of the need for this publication.

Contents

Preface iii
Acknowledgments iv

PART I: PROGRAM OVERVIEW

Curriculum Guide Organization 3
Purpose 5
Rationale 6
Program Goals and Objectives 11
Assessment and Evaluation 12

PART II: USING THIS CURRICULUM GUIDE

Course Design 17
Sequencing 18
  Ongoing Units 21
  Work-Related Skill Units 21
  Hands-on Components 22
  Sample Course Design 23
Preparing for the Program 33
Objectives of Hands-On Components 35
Teaching and Assessment Strategies 36
  Relational Learning Styles 40
  Suggested Teaching Strategies 44
Ordering and Using Media Resources 61
Related Programs and Publications 62

PART III: COURSE UNITS

Personal and Professional Development Skills

  Personal Growth and Development 67
    Develop Self-Awareness to Improve Learning Potential 68
    Practise Self-Assessment 79
    Culture, Gender, and Diversity 83
    Practise Building Self-Esteem 84
    Develop and Apply Problem-Solving Strategies 90
    Examine and Apply Guidelines for Goal Setting and Action Planning 94
  Women and Work 97
    Explore Women's Roles in Society 98
    Explore the Position of Women in the Labour Force 108
    Recognize, Adapt and Influence Workplace Culture 117
    Deal Effectively with Harassment 139

Survival Skills 147
  Manage the Requirements of Home and Work 148
  Apply the Techniques of Stress Management 152
  Manage Child Care 156
  Develop and Practise Assertive Skills 161

Work-Related Skills

Health and Safety 167
  Use Safe Work Practices 168
  Develop and Maintain Occupational Fitness 173

Academic Skills 179
  Develop Study, Research and Presentation Skills 180
  Develop Technological Literacy 190
  Overcome Math Anxiety 217
  Solve Mathematical Problems 222
  Examine Basic Physics Concepts 225

Hands-On Trades and Technology Skills 232
  Process Technical Information 233
  Practise Drafting and Blueprint Reading Techniques 235
  Develop Familiarity with Generic Tools 237
  Use Basic Measuring, Layout, Hand and Power Tools, Ladders, and Scaffolding in the Carpentry Shop 240
  Use Basic Measuring, Layout, Hand and Power Tools in the Metal Shop 243
  Secure Loads and Operate Equipment for Lifting 245
  Examine the Basics of Automechanics 246
  Explore Basic Plumbing Skills 248
  Develop Basic Skills in Oxyacetylene Cutting, Welding, and Brazing 250
  Use the Principles of Electrical Devices 252
  Explore Electronics Technology Applications 255
  Explore Basic Computer Skills 258
  Investigate the Environmental Sector 268
  Explore the Components and Career Opportunities of Forest Resource Technology 286

Work Experience Placements 289
  Work Experience 290

Career Development

Career Options and Decision Making 300
  Examine Labour Market Trends and the Impact of Technology on Opportunities in TTO 301
  Examine Training, and Employment Options and Requirements in TTO 308
  Demonstrate Career Decision Making and Follow-Up Activities 316
  Clarify Financial Aid Options 323

Functioning in the Workplace 324
  Describe Expectations and Responsibilities of Employers and Employees 325
  Develop Job-Search Techniques 329
  Describe Small Business Ownership 333

Rights and Obligations 336
  Explore Rights and Obligations in the Workplace 337
  Examine the Issues of Employment Equity/Affirmative Action/ Workforce Diversity 341

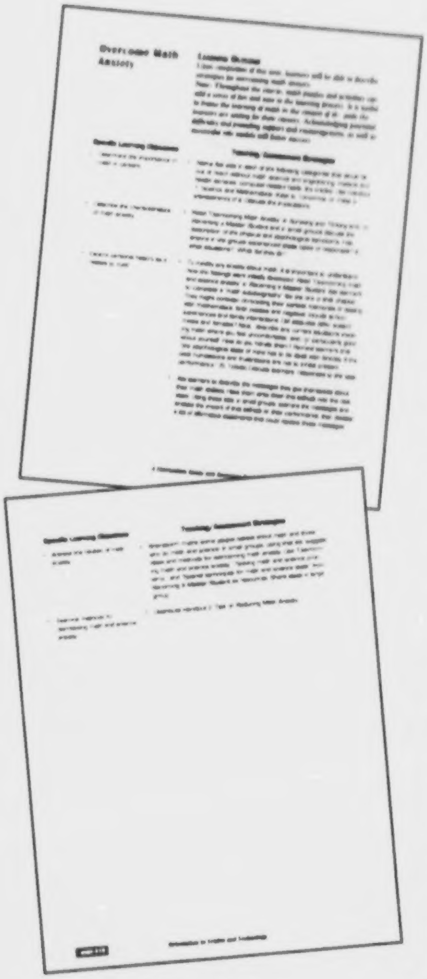
Appendix A 349

Part I: Program Overview

Curriculum Guide Organization

THIS GUIDE IS DIVIDED INTO THREE PARTS:

- ***Part I: Program Overview provides statements as to the purpose, rationale, and goals of the curriculum guide;***
- ***Part II: Using This Curriculum Guide gives practical information on how a course can be set up;***
- ***Part III: Course Units is divided into sections and topics containing sample units that can be used as a foundation for building your own course. Each topic has a general introduction identifying the units covered, their purpose, requirements, and key ideas. Each unit begins by identifying the Learning Outcome(s) and is then organized into two columns: the left-hand column states the specific Learning Objectives to be achieved within that unit, and the right-hand column identifies how these objectives are to be achieved by giving examples of possible learning activities and teaching strategies.***



Sample Course Unit Outcomes and Strategies

Just as it is recognized that not all learners will need to cover all units, so it is recognized that they will not all need to cover every Learning Outcome identified in the units. How much and what you use is up to you as the instructor. The WITT Standards and Guidelines contain recommended course lengths (see Appendix A). It is important to stress that the Specific Learning Objectives are sequential, as are the topics within the major sections. The topics build upon each other.

Each unit also includes a section of resources. These range from handouts that can be distributed to your learners, to teacher background information, and titles of useful books, films, and videos on the topic. Information on distribution, length, and ordering numbers of recommended videos and films is also included. The videos and films recommended are available through some provincial media outlets, the National Film Board or your college film librarian should be able to help you; but again, ordering can take time, so order as early as possible.

The Province of British Columbia has developed competency-based learning packages for many of the individual trades areas, and also for those skills that often are considered to be "common core" used across trades and many technologies. Originally developed as part of the TRAC system, this material has been developed and enhanced over the years both broadly and in

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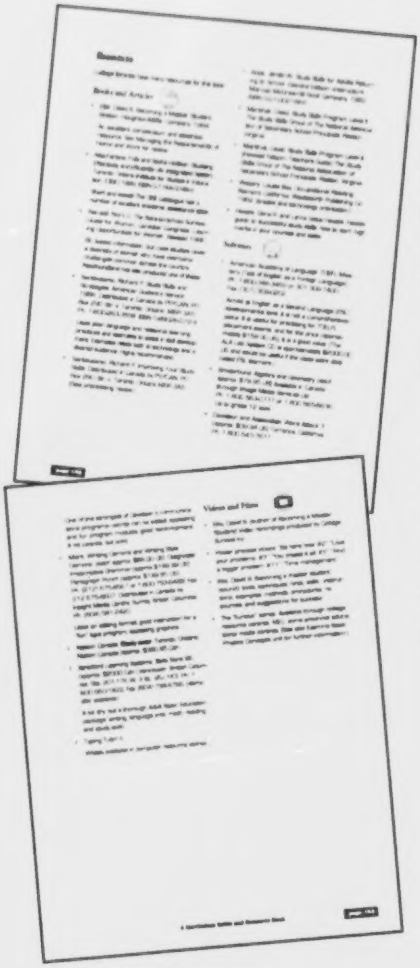
specific trades. While the TRAC system is no longer in use, the model for competency-based Learning Guides is often used as a resource for both entry level trades training and advanced trades training. Some of these guides are still called TRAC, and others are specific to their trade area. The material includes excellent simple explanations, graphics, background material, and self-tests. It has been purchased for use by many colleges across the country and by some provinces. The 1996 Outdoor Power Equipment and Motorcycle Repair Curriculum materials have rewritten and updated many of the elements of the TRAC course, and that has been reflected in the learning activities and resources throughout this book. Saskatchewan and Alberta have also been developing some trades-specific, competency-based training materials which can be shared with other provinces, and it will be important to determine what access you have to these material in your own province. At the present time, entry level "common-core" type learning guides are available only from British Columbia (which is currently revising some of the more actively used material) and Quebec. It is not essential that the TRAC system be used. Specific trades or technical instructors could use the learning objectives given to develop and present their own activities.



Sample Unit Resource

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Purpose

This curriculum guide ***was originally conceived and developed as a guide for instructors conducting courses for women entering trades, technology, and operations (TTO). It can, however, be used successfully with a wide range of learners regardless of their gender, age, or status. This guide covers far more material than can be completed in the time available for most courses (4-6 months). The topics are regarded as significant in a course designed for adults entering the field of trades and technology for the first time. Instructors will determine the depth and breadth of their programs through their choice of learning activities and teaching strategies. This guide by no means attempts to prescribe what should be taught; it should be regarded as a starting point and a resource to be used by you as a foundation on which to build your own course. You are encouraged to enhance, delete, change, and develop the sample units to fit your requirements and those of your learners.***

The purpose of this curriculum guide is to assist instructors to develop programs of hands-on orientation to trades and technology that will fulfil the following aims:

1. assist participants in developing life skills and the ability to plan careers
2. introduce participants to a wide variety of occupations in which women are currently under-represented, as well as a spectrum of newly emerging occupations in technical fields
3. provide participants with a realistic understanding of the requirements of working in these fields and provide skill training—physical, mental, and emotional—that will enable them to compete successfully for training and jobs in the field of trades and technology
4. assist participants to explore a number of trades and technologies in great enough depth to allow participants to make concrete decisions about their potential in each occupation.

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Rationale[1]

Orientation to Trades and Technology ***has been created to meet several needs. The primary function identified for this material is as a guide for instructors of Women in Trades and Technology exploratory courses. Much of the material, however, could be used in a wide variety of courses, from entry level trades training to employment orientation, or job re-entry to foundations in business.***

Women in Trades and Technology courses have been developed to respond to some clearly identified issues. Even as women have sought expanded economic opportunities, their access to the vocational areas that fulfil requirements of economic sustenance, job satisfaction, and interesting, productive work in trades and technology have been limited. Traditionally, women's education has not provided the basis for training and employment in these fields, especially in light of the added pressure of operating in what has been perceived as a male domain.

"To learn to be a skilled tradesperson (or technologist), a trainee needs to have the aptitude to develop these skills." The word "aptitude" causes much confusion. It has several definitions, the most common of which is "a natural tendency or inclination" (*Webster's New World Dictionary*), giving rise to the fallacy that aptitudes are innate; that is, they exist naturally rather than develop...A more accurate definition of aptitude, used by those who develop measuring instruments which attempt to predict the potential success of a learner in a vocational field, is: "A condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some knowledge, skill, or set of responses..." (author's emphasis: *Warren's Dictionary of Psychology*). Thus, aptitude is the potential to learn, and the potential to learn mechanical reasoning is developed through socio-cultural and educational institutions which provide opportunities for human-machine interactions and positive reinforcement for those deemed to have aptitude.

The assumption that males have the "innate" aptitude for skill development in these areas and that women do not has meant that little has been done to enhance or encourage girls' and women's potential in tool skill and mechanical reasoning.

> "Because mechanical reasoning is presumed to be innate and because the learners who enter trades and technology training are predominantly males who have developed a

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[1] The quotes in this section are all from "Mechanical Reasoning and Women", an article by Susan Booth, November 1981. Reproduced here with permission.

repertoire of sensory information, theoretical insights, and associated problem-solving skills, most instructors design courses that assume a certain level of sophistication. Already women are disadvantaged or eliminated - not because they do not have the potential or the aptitude, but because they have not had the benefit of the antecedent exposure and experiences necessary for the integration of the new skills and knowledge."

Recognition that these hand-eye and thinking skills can be developed with training means greater opportunities for both men and women to enter fields of work that would have been closed to them as a result of the deficiencies in their earlier socialization and educational experiences.

"Thus, a learning environment needs to be established that will quickly and effectively facilitate the transfer of a woman's diagnostic and problem-solving skills from people-centred to mechanical devices. This can be done by addressing her needs to acquire experiences in the physical manipulation of tools and machines, gain sensory exposure to the sounds, smells, and feel of the industrial environment, develop a technical vocabulary, learn basic math and science concepts applicable to trades and technology, and overcome learned hesitancies and dependency. To create this environment, the following requirements must be addressed:

1. Transferability Potential

Of initial importance is the recognition on the part of both the instructor and the women of the mechanical skills and reasoning processes she has already developed; she does not begin with a clean slate. Within her background are many experiences from which she can build upon and transfer to the mechanical world. It's a matter of changing the mind-set from "I've never done anything like this before" to "I've done a lot of similar learning and what I need to do now is to make the connections between that to this". Tradeswomen who report no trouble reasoning mechanically consistently compare the process to cooking and sewing.

2. Generic Introduction

A wide variety of experiences which will develop sensory, motor, language, math and science skills appropriate to the skilled trades must be designed. Attuning the sensory receptors to the environment is accomplished through immediate hands-on work where she not only learns the basic tool skills common to all trades and technology fields, but also develops a familiarity and appreciation of the touch and feel of industrial materials, the smell and noise of the tools and machines, and the visual impact of a well-finished product.

Physical exertion to the uninitiated happens rapidly and feels like an indecent assault on the senses, so she is given time to learn how to develop and use her body efficiently and effectively. She works on increasing her strength, flexibility and endurance, and appropriately matching the various facets of her kinaesthetic capabilities to the task at hand.

She acquires technical vocabulary and math and science concepts through theory and through direct application as she follows instructions and works to completion of a job. She becomes an active, independent learner when she begins to ask questions, reference resource materials, make decisions, initiate projects of particular interest and relevance to her own learning needs, and evaluate-the completed task in terms of its stated objectives.

3 . Mechanical Tinkering

Tinkering is an absorbing, self-paced, exploratory type of learning, which has as its goal to work and play with an object until an increased awareness and understanding of the essence of the object emerges. Women traditionally practise tinkering (also referred to as "puttering") in the kitchen or sewing room, so here again it is more a matter of facilitating the transfer of an already learned skill to a new application. Through mechanical tinkering, an intimate familiarity is developed wherein theoretical concepts are grasped, information is processed, and a power relation is established: the tinkerer gains mastery over a complex inanimate object.

Mechanical tinkering is most beneficial when it is scheduled into the learning environment as a skill module of its own so a woman can develop an appreciation of its educational benefits and a comfortability and facility with its unstructured format. Six conditions are necessary if tinkering is to be successfully formalized as a method of teaching mechanical reasoning:

a) sufficient time must be allowed for the learning to take place;
b) the learning is autonomous, with resource materials and people used only as a learner chooses;

c) the tasks must be of interest and of some degree of complexity;

d) observations are reflected upon and discussed or recorded;

e) the learner evaluates herself for what she has learned, assesses the quality of the work, and critiques and corrects any mistakes;

f) the transferability potential of the experience is noted.

When these requirements are present in a learning environment, women can quickly develop mechanical reasoning skills and competently learn to perform the work required of them by skilled trades and technology instructors and employers."

Women-only programming, constituency-based programming: A number of studies have shown that learners live up to the expectations of the instructors of their courses (see the bibliography in the Math Anxiety unit). Also, there is the term "self-fulfilling prophecy," which means that learners live up to their own expectations, rather than their hopes. While we still have a culture in which many women have high hopes and low expectations and aspirations, it is essential that these women have the opportunity to develop their skills and abilities in a supportive group environment with other women. This is particularly true in our current situation in which 70% of the workers who will be in the workforce in the year 2010 are a part of the labour market today.

It is important that learners test out their learning in situations where they will be judged against themselves, rather than the man standing next to them who may be at a very different place in his development. Women at similar stages of learning, competing, and co-operating with each other can provide a healthy and productive atmosphere in which to grow. Once a woman has achieved some general mastery, she is then ready to enter regular technical training and employment on a more equal footing.

Everyone facing employment or change of employment in today's complex world also needs as much assistance as possible in identifying labour market trends, making career decisions, setting goals, and developing and projecting their abilities to successfully access training and employment in their chosen fields. Women, especially those who have been out of the labour market for long periods of time and those who have been stagnating in low-paying, dead-end jobs, need the additional benefit of exploration and skill development in the specific areas of women and work. In particular, they need to develop strategies to overcome both internal and external societal barriers to gain success.

Women and men alike need to develop and practise assertiveness skills, understanding the difference between aggressive, assertive, and passive or non-assertive behaviour. All individuals with family and home responsibilities can profit from exploring ways to balance the requirements of home and work or training, ways to manage stress, and ways to identify and ensure appropriate childcare arrangements. Often, women benefit from developing and practising these skills in a supportive, single-gendered environment, before applying them actively in the regular world of training and work.

Women in Trades and Technology programs are exploratory in nature. They provide the opportunity for women to develop the necessary skills to make career and training decisions that will allow them to compete successfully in the world of work.

Program Goals and Objectives

Goals

The following goals are for an Orientation to Trades and Technology course and have been developed by the Provincial and National Advisory Committees:

1. to provide a safe, supportive environment that will enable women to develop the self-confidence and technical skills necessary for success in training and/or employment in trades and technology
2. to provide the life skills and assertiveness training necessary to enable women to compete successfully in training and employment
3. to assist women to develop an awareness of the full range of possible occupations in trades and technology fields
4. to provide labour market information, career planning, and job-search skills to assist participants in making informed career choices
5. to assist women to develop strategies for dealing with the multiple roles of working women
6. to provide basic academic upgrading in math, science, and communication skills to enable participants to pursue further training and employment options
7. to provide hands-on skill development with tools and equipment in a training shop setting for a wide range of trades and technologies
8. to provide hands-on work experience in industry to encourage a realistic consideration of potential work environments.

Objectives

The learning outcomes for this course are identified separately at the beginning of each unit. Each unit contains a series of series of specific learning objectives that guide student learning.

Assessment and Evaluation

The goals of this program indicate that this is an exploratory course with a great deal of affective as well as cognitive learning. Success should be determined not only in terms of the numbers of learners gaining employment at the end of the course but also whether learners have improved their employability skills, met the goals set, and taken steps to change difficult or self-defeating lifestyle situations. There are also less tangible aspects such as the impact of the course on college relations with the community (i.e., assisting in the development of skills in a group that had not participated effectively in college programs; increasing the profile of the college with employers and in the community at large, etc.).

Keys to the assessment of learner outcomes are built into the teaching strategies, and often include assessment by the learner as well as the instructor. There are also peer evaluation opportunities built into many cooperative learning activities.

Learner evaluation of the program should be a major factor and should include their perceptions on the usefulness of each aspect of the course, its impact on their development, the effectiveness of instructors, instructional techniques, scheduling, learning environments, etc. Part of this self-evaluation should be ongoing, through class discussion, and additional information should be available in the learners' journals. Much can be collated from questionnaires distributed at the end of the course.

Follow-up evaluations of learners should be done at six-month, one-year, and three-year intervals. These should include questions that explore the training and career decisions taken in the interim, the progress toward any goals set, and the satisfaction gained in working toward those goals. It is also important to ask learners to identify specific skills or areas of study that they feel should have been included in the course, and what specific barriers or blocks they have encountered since graduating that have hampered the pursuit of their goals.

The specific technical instructors involved in the course should be asked to evaluate not only individual learner progress, but also their own part in the entire program, including scheduling, effectiveness of specific units, their desire to participate in ongoing programs, etc.

The employers should be asked to evaluate the individual learner, and give their own perception of the effectiveness of the training experience they were able to provide, as well as comment on their willingness to continue to participate in the work experience.

This feedback (together with your own observations) should provide sufficient information to analyse the benefits and challenges of your program, and should allow you to develop formative recommendations for the future.

Evaluation of Learners

Learners need opportunities to reflect upon and analyse their progress: both individual skill development, critical thinking and problem-solving, and their abilities and attitudes. Much ongoing assessment can be accomplished through interaction with the instructor, and by using learner journals as the basis for such interaction. (See Suggested Teaching Strategies.)

Since so much of the learning is in the affective domain, it is important to use the self-assessments; the journals, the various stress, time, and lifestyle management plans; the goal-setting and career-action plans as indications of incremental gains achieved in the program. Any clear steps in advancement taken during the course should be noted by both the learner and the instructor. Peer support and feedback could also be used in evaluating learner progress.

Trades and technical programs have their own testing and evaluation systems built in for specific trade and technology skill development. Technical instructors would be responsible for evaluating each learner's work in a specific area. It would be useful if some determination could be made not only of specific attainment but also of the quality of effort, although this may not be possible. As well, any transfer into Adult Basic Education would include a placement examination, and most technical programs require some entrance readiness assessment tests.

There are many effective ways to evaluate learners, but one that has proved to be very valuable for both learners and instructors is the use of checklists. *ABE Communications, module 1-6*, (Province of British Columbia, Ministry of Education) uses checklists as its primary form of evaluation. This publication provides a valuable resource for using checklists.

Work experience should be evaluated by both the participant and the employer, especially in terms of analysing what has been learned in the technical, career exploration, and work skill acquisition areas.

Part II: Using This Curriculum Guide

Course Design

Note: portions of this guide can be used effectively with a great variety of other course material, not only in trades and technology but in many other disciplines.

This section is set up to help instructors use the course units by providing practical information to aid in program design. Part III: Course Units is divided into three sections: Personal and Professional Development Skills, Work-Related Skills, and Career Development. Each section is divided into topics, each with sample units that contain learning outcome, specific learning objectives, and activities and teaching strategies. Some of the activities are stand alone; but often they are sequential and build on previous activities to achieve the desired outcome(s).

All of the sections and topics identified in Part III of this guide have been recommended by several different provincial and national DACUM sessions, including those that set the National Standards in Exploratory Courses in Trades and Technology for Women (see appendix A). This curriculum guide was revised to reflect those Standards, and to provide the basis for the delivery of programs that meet those Standards. The topics and units can assist learners in obtaining training and employment in trades and technology areas. Program developers will need to ensure adequate funding for programs to meet those Standards, and instructors will have to determine, in concert with a local Program Advisory Committee, which aspects of the curriculum will be emphasized within the time available.

Experience has proven that those who take a course of this nature are not given to sitting in lectures day after day. It is important to introduce components of hands-on exploration early on in the course. Furthermore, it is beneficial to intersperse study, class discussion, hands-on exploration in the shops/labs/field and group, and individual learning activities from each of the three major sections, throughout the course.

Sequencing

The first section covered in Part III is **Personal and Professional Development Skills** which is divided into three sections; Personal Growth and Development, Women and Work, and Survival Skills. The development of these skills is especially important for those learners who are returning to school. A minimum of three weeks over the duration of the course is recommended for this section. However, more emphasis should be placed on these skills during the first few weeks of the course to prepare learners for the more technical material to follow.

The Personal Growth and Development topics should be completed within the first two or three weeks of the course except for the unit, "Examine and Apply Guidelines for Goal Setting and Action Planning," which should be explored in the last week or two of the course. The unit, "Develop Self-Awareness to Improve Learning Potential" provides a strong basis for learning throughout the program.

The Women and Work topic should be started during the first week, and portions should continue throughout the course.

Survival Skills should be completed during the first week, except for the unit, "Develop and Practise Assertive Skills," which should be ongoing (see Ongoing Units.)

Several of these units work well in concert with units from the Career Development section. "Practise Self-Assessment" can be combined with "Examine Labour Market Trends and the Impact of Technology on Opportunities in TTO," and can be integrated with "Develop and Apply Problem-Solving Strategies" and "Demonstrate Career Decision Making and Follow-Up Activities." The model program in this Course Design section provides many examples of how the units may fit together.

Work-Related Skills is the second major section in Course Units and is broken down into four major topics: Health and Safety, Academic Skills, Hands-On Trades and Technology Skills, and Work Experience Placements. Each of these topics will require quite different treatment.

Within Health and Safety, there are two units: "Use Safe Work Practises," which requires approximately three days and can be completed during the second week of the course; and "Develop and Maintain Occupational Fitness," which should be started in the first week and integrated throughout the course.

The use of the Academic Skills topic will vary, depending on the trades or technology areas to be emphasized in your course. Every learner will benefit from the topic on "Develop Study, Research and

Presentation Skills," which could begin during the first week of the course, and be ongoing. "Overcome Math Anxiety" and "Solve Mathematical Problems" are units that could be taught as a continuum, beginning early in the course and continuing throughout the course depending on the depth required by the particular learners. The Physics topic could well be completed before the learners enter the trades or technical shops or labs, where such knowledge would be useful to them. There are some shops where Physics will not be necessary and, since getting experience in the shops is, for learners, the primary aim of the course, Physics might be delayed until after some shop work has occurred.

A minimum of four weeks and as much as eight weeks is recommended for the Hands-On Trades and Technology topic. For learners, this is the major reason for being in the course; accordingly they often consider the rest of the course as "window dressing." However, experience has shown that if learners are not sufficiently well prepared to enter the technical and work-oriented side of the course, their potential for success is significantly lessened.

Reference to competency-based learning material is used throughout the units, and this guide suggests using the reading and self-testing material as homework. This symbol will be used when an activity can effectively be done as homework. Questions and problems should be dealt with during class time, with specific trades and technical instructors providing classroom instruction as well as shop instruction and supervision. Every effort should be made to ensure that trades and technical women are in these roles.

The units on "Process Technical Information" and "Practise Drafting and Blueprint Reading Skills" are regarded as an introduction to much of the technical work to be explored by learners. Thus, they should be covered in the week before learners actually go into the shops. "Develop Technological Literacy" provides a framework for using tools and technical skills effectively, and could be started in the third week and ongoing, combined with the Hands-on units.

The units on Carpentry, Metalworking, and Mechanics all make good introductory shop experiences. Hand and power tool skills are developed and enhanced through these units, and safety consciousness is cultivated. Using a circular saw is often a major hurdle and learners must be supported and encouraged to do so. Electrical installation and repair, electronics, and welding could follow these units once learners feel more comfortable in the shop.

The Hands-On Trades and Technology Skills topic should start in the second or third week of the course and continue for four to eight weeks. Many instructors have found that it is useful to have shop and lab work only four days a week, leaving one day free to cover other course material (i.e., assertiveness training, fitness, testing, developing strategies for overcoming societal barriers, preparing for the work experience, etc.).

The Work Experience Placements topic should also be of four to eight weeks duration, and should follow the shop and lab training. It is through actual experience that learners begin to understand and evaluate what the world of trade and technology is all about. Allowing learners a longer exposure and a wider range of experience in this area will permit more informed decisions to be made at the end of the program. Two three-week work placements in different settings are ideal, enabling learners to get comfortable in the work environment, learn some skills, and actually be of use to the employer for some time.

Career Development is the third and final section, with three topic areas: Career Options and Decision Making (approximately seven to ten days); Functioning in the Workplace (four to five days); and Rights and Obligations (about three days.)

The Career Options and Decision Making topic should begin in the first week of the course, with the unit, "Examine Labour Market Trends..." "Examine Training and Employment Options and Requirements in TTO" should be an ongoing unit, with portions of it recurring several times during the early weeks of the course and on the free days of the shop weeks. The final two units in this topic—"Demonstrate Career Decision Making and Follow-Up Activities," and "Clarify Financial Aid Options"—should take place during the last two weeks of the course.

The Functioning in the Workplace topic is comprised of three units: "Describe Expectations and Responsibilities of Employers and Employees," which would be well placed in the second or third week of the course; "Develop Job-Search Techniques," which is best explored in the last two weeks of the course, after some occupational clarity has been achieved; and "Describe Small Business Ownership," which is better left to the last two weeks, after some motivation and understanding of the work world has been developed.

The Rights and Obligations topic consists of two units: "Explore Rights and Obligations in the Workplace," and "Examine the Issues of Employment Equity/Affirmative Action /Workforce Diversity." This topic examines the variety of legislation that can have an impact on the employer/employee relationship. It would be useful to complete this topic in the week before going into the shops, or during the shop weeks, before going out on work placements.

Ongoing Units

Many units have activities that can be accomplished in one morning or afternoon session, while other activities might occupy a few days at a time. Several units have a variety of activities that require ongoing sessions over the duration of the course. These have been presented as ongoing because some areas of knowledge need to be integrated with training and experience over a longer period of time to solidify the learning. Although several units have been identified as ongoing in this guide, individual instructors may feel there are other units that warrant this kind of treatment. As is the case throughout this guide, instructors should feel free to modify the material to suit learners' needs and the availability of resources.

Work-Related Skill Units

This guide often recommends that competency-based learning guides be used as homework to provide learners with an effective introduction to the actual shop or lab work in each field. This will ensure some theoretical knowledge while using precious class time with instructional personnel more efficiently. It is sometimes the case, however, that the information required for shop or lab work is too technical for learners to learn independently, so a qualified instructor in that field will be required to introduce the subject. These have been noted in the units. British Columbia and Quebec are the only provinces that have full-scale curriculum development for these materials, though other provinces (Saskatchewan and Alberta) have developed some materials.

The TRAC materials referred to were originally developed as part of a Common Core Curriculum in the trades. While the implementation of the program ran into difficulties, the learning materials still have a great deal of use in an exploratory model. Some have been revised and updated; the concept has been used as a model by other trade areas; and several provinces have purchased the materials and are using them. This guide tries to reflect the most recent and/or useful resources available at press time (found at the end of each section), but new materials are being developed all the time. Check what is available locally.

It may to be more constructive to spend a solid block of time in each technical area rather than moving around to several areas in a week. Again, each situation will determine the possibilities. This guide also suggests that the competency based testing materials be used in a variety of ways. For instance, one test could

28

be pulled out and copied for the whole group to complete during class time. Retesting can be done on an individual basis outside of class time either by the instructor/co-ordinator, or in the college learning centre. It is recommended that such regular testing in technical units take place, enabling the potential for credit toward courses and certification when career choices are made.

Hands-On Components

There are two hands-on components essential to learner success in this course: hands-on training in tool and material use, and work experience.

Hands-on training in tool and material use in the shops and labs is fundamental to the development of any trades or technical worker. It is particularly crucial for the many women who have not had previous exposure or training in these fields. Scheduling and negotiating instructional and shop time will be one of the instructor's main preparation time responsibilities. If access to regular technical shops is limited, consider using local high school facilities and hiring the necessary specific instructors on a short-term basis. Another option is to identify employers in the area who would be willing to provide access to their premises for three- or four- day workshops.

The work experience side of the course must be negotiated with local employers. There are two ways this can be approached. Some instructors feel that the learners should do this entirely on their own to gain practise for the real world of work. Others feel that it is their job to develop a list of willing employers from which the learners could choose and interview. In either case, learners who wish to strike out on their own should be encouraged to pursue new options. However, the majority of instructors do feel that some discussion by them with local employers is important in order to maintain an ongoing relationship between the employers and the college or institution. Either way, finding and using willing employers is essential to any Orientation to Trades and Technology program, as well as to most other vocational training programs.

Sample Course Design

This section outlines one example of how a 20-week Women in Trades and Technology program may be developed using the course units provided in this guide. This course design shows how the various course design elements have been incorporated into the timetabling.

Note: This sample course design covers both trades and technology. For a program that focuses primarily on technology, the instructor can readily modify this sample outline to prepare learners effectively for the additional science courses they are likely to need. Three modifications are suggested to help learners develop the analytical thinking skills they will need in computing, algebra, and advanced science courses.

1. *Throughout the course, the instructor should encourage learners to explain their reasoning for each decision they make, and then listen objectively to each other's reasons.*
2. *Repeat the workshop in the Overcome Math Anxiety unit near the middle of the course. This time, deal specifically with algebra and have learners work together to solve simple problems in manipulating equations.*
3. *Have learners solve physics problems using very simple numbers, until they are at ease with combining mathematics and scientific concepts.*
4. *Increase the amount of time spent on learning activities in the "Develop Technological Literacy" and "Investigate the "Environmental Sector."*

WEEK ONE

Monday

- Registration
- introductions
- General orientation
- Show the film *Breaking Through* from the "Recognize, Adapt and Influence Workplace Culture" unit, and discuss.
- From "Examine Training and Employment Options and Requirements in TTO," complete the 1st and research the 2nd teaching strategy (T.S.).
- Orientation to competency-based learning materials.
- 💼[2] Assign competency-based materials on "Safe Work Practises," "Describe Hazardous Materials," "Describe WHIMIS," and "Math".
- From "Develop Technological Literacy" complete teaching strategy (T.S.) #1.

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[2] This symbol will be used when activities can effectively be assigned as homework.

Tuesday

- From "Explore the Position of Women in the Labour Force "- use T.S. # 1 and 2 to develop a historical/current perspective.
- From "Explore Women's Roles in Society" - complete T.S. # 1 - 3.
- From "Practise Self-Assessment" - complete T.S. # 1 - 4.
- Show videos from "Examine Training and Employment Options, and Requirements in TTO - Show the films, *Attention Women At Work* and *What About You?* and conduct a discussion using questions from T.S. # 7.
- Develop questions based on T.S. # 4.

Wednesday

- From "Develop Self-Awareness to Improve Learning Potential" - complete T.S. # 1 - 3. Assign the fourth T.S.
- Conduct fitness testing.
- From "Explore Women's Roles in Society" show the film *Killing Us Softly* and discuss as per T.S. # 6.
- From "Develop and Practise Assertive Skills" - complete T.S. 2 & 3.
- Complete T.S. #1 in "Examine Labour Market Trends and the Impact of Technology on Opportunities in TTO."
- Assign readings in T.S. # 2 & 3 in "Overcome Math Anxiety"

Thursday

- From "Overcome Math Anxiety" - complete all steps in the unit in workshop format (bring in a supportive female math instructor, if possible).
- Complete general knowledge inventory and T.S. # 1 - 4 in "Develop Familiarity with Generic Tools."
- From "Develop and Apply Problem-Solving Strategies" complete T.S. # 1 - 5. Assign readings from T.S. # 6 & 7.

Friday

- From "Develop Study, Research and Presentation Skills" - complete T.S. # 1 - 2.
- From "Develop Self-Awareness" - complete T.S. # 4, the Discovery Wheel from *Becoming a Master Student*.
- From Develop and Practise Assertive Skills complete T.S. # 1, 4, & 5.
- From "Develop and Maintain Occupational Fitness" - complete T.S. # 1, 2, & 3.

WEEK TWO:

Monday

- From "Manage the Requirements of Home and Work" - complete T.S. # 1 - 4. Assign T.S. # 5 - 7.
- From "Solve Mathematical Problems" - arrange a math workshop to introduce topics and evaluate learners' needs.

- Show the film, *Orthographic Projection* from "Drafting and Blueprint Reading."
- Complete TRAC Common Core *Line D: Sketch and Read Drawings* Learning Guides.
- Conduct an occupational fitness workshop.

Tuesday

- From "Use Safe Work Practises" - show the video *Extinguishers*; participate in a theoretical and practical workshop with the local fire department. Ensure that learners are working on the Learning Guide, and check for problems.
- From "Explore Women's Role in Society" - use T.S. # 5 on role stereotyping.
- From "Practise Building Self-Esteem" - complete T.S. # 1 - 4.
- From "Practise Drafting and Blueprint Reading Techniques"- show the film *Orthographic Projection*. Conduct a workshop with a drafting instructor and practise with any problems identified.

Wednesday

- From "Use Safe Work Practises" - complete T.S. # 1 - 4. Include a Workers' Compensation Board guest lecture and invite a speaker from a Labour Council or union Industrial Health and Safety Committee.
- From "Explore the Position of Women in the Labour Force" - show the films, *Great Grandmother*, *Rosie The Riveter*, and/or *Keeping the home fires burning: women, war work and unions in British Columbia*. Complete T.S. # 1 & 2.
- Complete "Explore Basic Computer Skills" T.S. # 1 - 9.
- Conduct an occupational fitness workshop.

Thursday

- From "Recognize, Adapt and Influence Workplace Culture" - show slide/tape or video of *What Happens to Women in Tradesland*. Complete T.S. # 2 & 3. Assign reading from T.S. # 4 - 6.
- From Practise Building Self-Esteem - complete T.S. # 5 & 6 on Cultural and Stereotype Influences.
- From "Explore Basic Computer Skills" - complete T.S. # 10 - 16, dealing with operating systems and software applications.
- Assign research and reading in T.S. # 1 in "Process Technical Information."
- Drafting homework is due.

Friday

- From "Examine Training, Employment Options, and Requirements in TTO" - complete T.S. # 3 - 5 (including arranging for a speaker on apprenticeship and tour of the shops).
- From "Practise Building Self-Esteem" - Complete T.S. # 5 - 7.
- From "Develop and Practise Assertive Skills" - complete T.S. # 6 -8. Assign last T.S.
- From "Examine Labour Market Trends" - show the film: *Now The Chips Are Down* or *Goodbye Guttenburg* (first 45 minutes). Complete T.S. # 4 and assign T.S. # 2 & 3.
- Conduct Math Workshop.
- Assign reading from TRAC Common Core Line F-1 , G-1, M-2, and L-5 or instructor-developed material for carpentry and scaffolding.

WEEK THREE:

Monday

- From "Examine Training, Employment Options, and Requirements in TTO" - develop questions from T.S. # 9; deliver to potential role models.
- Complete T.S. # 5 & 6 from "Develop Familiarity with Generic Tools," and T.S. # 6 - 9 from "Use Safe Work Practises" on Personal Protective Equipment.
- Conduct a computer-assisted design workshop. Review any material needed to deal specifically with problems found in the homework.
- Complete T.S. # 1 - 7 from "Manage Child Care".
- Assign: competency-based learning materials on hand and power tools and materials, fitting and fastenings from "Use Basic Measuring, Layout, Hand and Power Tools, Ladders, and Scaffolding in the Carpentry Shop," T.S. # 2, 4 & 5.

Tuesday

- From "Use Basic Measuring, Layout, Hand and Power Tools, Ladders, and Scaffolding in the Carpentry Shop" - complete T.S. # 1 -5 with a showing of the videos, *Handsaws*, *Portable Electric Saw*, and *Sharpening Drill Bits*.
- Complete T.S # 5 & 6 on alcohol and drug abuse from "Develop Self-Awareness to Improve Learning Potential."
- Conduct an occupational fitness workshop.

Wednesday to Friday

- Complete T.S. # 6 & 7 in "…Carpentry Shop."
- Show video: "It's Happened Before" from Process Technical Information.

- Ensure that "Process Technical Information" homework T.S. # 4 & 5 is completed for Friday.
- Learners present oral reports on labour market trends - complete T.S. # 3 & 4 in "Examine Labour Market Trends."
- From "Deal Effectively with Harassment" - show the videos, *Taking Action* and *Call Me Sister, Call Me Brother*. Complete T.S. # 1 - 5.

WEEK FOUR:

Monday

- From "Examine Training and Employment Options in TTO" T.S. # 9, assemble a panel of tradeswomen. Use questions developed earlier.
- Conduct a Math workshop.
- Conduct an occupational fitness workshop.

Tuesday to Wednesday

- From "Use Safe Work Practises" - use T.S. # 13 and set up Survival First Aid Certificate workshop.
- From "Apply the Techniques of Stress Management" - complete T.S. # 1 - 5.
- Assign *TRAC Common Core Line C: Physics Learning Guides*, or assign related materials.

Thursday

- From "Examine Training and Employment Options in TTO" - take learners on a tour to assess a working environment using T.S. #8. Suggested: tour telephone company facilities or similar technical industry.
- Invite college or private sector trainer to provide WHIMIS training.
- Assign *TRAC Common Core Line B math test* or instructor-developed material.
- From "Describe Expectations and Responsibilities of Employers and Employees" - Assign *Outdoor Power Equipment and Motorcycle Service Technician B - Line* and *Job Search - the Product is You.*

Friday

- From "Examine Basic Physics Concepts" - view the videos in the *Eureka!* series. Complete T.S. # 1, 2, and the reading from T.S. # 6.
- From "Describe Expectations and Responsibilities of Employers and Employees" - use T.S. # 1 - 4.
- Conduct a discussion of work ethics and work habits gleaned from *Outdoor Power Equipment B-Line*.

- From "Explore Rights and Obligations in the Workplace" - Assign *Outdoor Power Equipment - Line A reading.*
- Conduct an occupational fitness workshop.

WEEK FIVE:

Monday to Thursday

- From "Examine Basic Physics Concepts" - complete theory and lab work for T.S. # 3 - 9 with a qualified instructor.
- From "Develop Technological Literacy", assign readings in T.S. # 1 - 4.

Friday

- Assign *TRAC Common Core Line C Physics test* or instructor-developed material.
- Complete T.S. # 8 - 12 from "Managing the Requirements of Home and Work" - assign reading in # 13.
- From "Examine Training, Employment Options, and Requirements in TTO" and "Explore Basic Computer Skills" - conduct an Internet workshop to research training and employment options.
- Request the compilation and delivery of research projects as T.S. # 2, 3, & 9.
- From "Develop Technological Literacy" - complete T.S. # 3 - 6.
- Assign reading from *Commercial Transport Mechanic: Line E: Lift Loads*.

Note: A week in any one of the following shops can be replaced with a shop/lab of your choice.

WEEK SIX:

Monday to Thursday

- From "Examine the Basics of Auto Mechanics" - Show the video: *Auto Shop Safety*. Complete all teaching strategies.
- From "Secure Loads and Operate Equipment for Lifting" - complete all teaching strategies. *Complete Commercial Transport Mechanic: Line E: Lift Loads.*

Friday

- From "Explore Rights and Obligations in the Workplace" - complete T.S. # 1 - 4, including speakers from the Human Rights Commission and Employment Standards.
- Show the videos: *Workers Without Unions* and *Workers in Unions, Celebrating the CAW: 10 Years of Social Unionism*, and *Working Lean*. Complete T.S. # 5 - 7.
- From Examine Training, Employment Options, and Requirements in TTO - show the film, *Goodbye Guttenburg* and invite a panel of technologists to respond to questions.

- Assign reading in *Intro to Electricity and Electronics* or *Outdoor Power Equipment D-Line*.

WEEK SEVEN:

Monday to Friday

- From "Use the Principles of Electrical Devices" - complete all teaching strategies.
- From "Develop Technological Literacy" - show the video, *The Two-Edged Sword: CAW and New Technology*. Conduct class discussion on T.S. # 2 - 6.
- Electrical test on Friday.

WEEK EIGHT:

Monday to Thursday

- Assign reading from "Manage the Requirements of Home and Work" T.S. # 14 & 16.
- From "Explore Electronics Technology Applications" - complete teaching strategies for this unit.
- Assign reading from *TRAC Common Core Line J: Welding* or *Outdoor Power Equipment Learning Guides*.
- From "Practise Building Self-Esteem" - complete T.S. # 8 - 10.

Friday

- From "Develop Technological Literacy" - complete T.S. # 7 - 10.
- Complete T.S. # 14 - 18 from "Manage the Requirements of Home and Work."
- Conduct an occupational fitness workshop.

WEEK NINE:

Wednesday to Friday

- From "Use Basic Measuring, Layout, and Hand and Power Tools in the Metal Shop" - show the video, *Working With Metals in the Plant: Introduction to Metals* and *Properties of Metals* and complete all teaching strategies in this unit except the theory testing.
- Assign *TRAC Common Core Line F-2*, *G-2*, *M-1*, and *L-2* tests.
- Arrange a tour of a computer-assisted machining operation.
- From "Develop Technological Literacy" - complete T.S. # 6.
- From "Examine Labour Market Trends" - complete T.S.# 6 & 7. Encourage class to consider # 5, making a video.

WEEK TEN

Monday

- From "Explore Basic Plumbing Skills" - complete all teaching strategies.
- Conduct an occupational fitness workshop.

Tuesday to Friday

- Develop a construction technology unit with a qualified instructor; could include surveying, concrete, estimating, management, etc.
- From "Develop and Practise Assertive Skills" - complete T.S. # 9, arrange an assertiveness training workshop practise session with video camera.
- Evaluate how shop weeks are going. From "Develop and Apply Problem-Solving Strategies," use T. S. # 7 - 11.
- Complete T.S. # 1 - 5 from Work Experience.

WEEK ELEVEN

Monday to Friday

- From "Develop Basic Skills in Oxyacetylene Cutting, Welding, and Brazing" - show Welding videos and complete practical competencies in T.S. # 1 - 7 in shop.
- From "Recognize, Adapt and Influence Workplace Culture" - complete T.S. # 7 on assumptions, and assign reading on support strategies from T.S. # 11.
- Assign reading from "Investigate the Environment Sector" T.S. # 1.

WEEK TWELVE

Monday to Friday

- From "Develop Study, Research and Presentation Skills" - complete T.S. # 3 & 4 using topics from "Investigate the Environment, "Technological Literacy" or "Explore the Components of Forestry" units in the next two to three weeks.
- From "Investigate the Environment Sector" - complete all teaching strategies.
- Oral reports due on occupational research projects.
- Complete T.S. # 6 - 8 from Work Experience.

WEEK THIRTEEN

Monday to Friday

- From Develop Technological Literacy - compete the T.S. associated with design and development of products and processes.
- Complete technical make up and testing.
- Complete T.S. # 1 and assign T.S. # 2 from "Explore Components and Career Opportunities of Forest Resource Technology."

WEEK FOURTEEN

Monday to Friday

- Complete all teaching strategies in "Explore Components and Career Opportunities of Forest Resource Technology."
- Assist with any last minute elements regarding work experience.

WEEKS FIFTEEN TO EIGHTEEN

- Learners in work experience placements. Monitor and assist.

WEEK NINETEEN

Monday

- Evaluate work experience using last three teaching strategies in "Work Experience."
- From "Examine and Apply Guidelines for Goal Setting and Action Planning" - show the film: *You Pack Your Own Chute*. Complete all teaching strategies for this unit.
- From "Clarify Financial Aid Options" - complete all teaching strategies for this unit (i.e., invite a panel of experts with all the financial aid sources represented).

Tuesday

- Show the film: *Moving Mountain* and discuss.
- From "Demonstrate Career Decision Making and Follow-Up Activities" - complete T.S. # 1, 2 & 4 and assign T.S. # 5.
- Review Assertiveness Training: follow up on issues arising from work experience situations.
- Assign any technical retests.

Wednesday

- From "Examine the Issues of Employment Equity/Affirmative Action" - complete all T.S. for this unit.
- Complete last two T.S. from "Manage the Requirements of Home and Work."
- Complete last three T.S. from "Demonstrate Career Decision Making and Follow-up Activities."
- Arrange technical retests.

Thursday

- From "Demonstrate Career Decision Making and Follow-up Activities" - using all material generated on this issue throughout course, complete last T.S. Work with learners individually or in groups as they are going through this process.
- Conduct occupational fitness workshop, with fitness testing to compare with first test.

Friday

- From "Describe Small Business Ownership" - complete T.S. # 1, 2 & 4.
- Arrange technical retests.

WEEK TWENTY

Monday

- Show the film, *The Job Search Is You.*
- From "Develop Job-Search Techniques" - complete T.S. # 1 - 6.
- Work on the T.S. # 7 for resumé writing. Assist learners individually. Hand out the sheet on common interview questions.
- Show the video, *The Interview.*

Tuesday

- From "Develop Job-Search Techniques" - complete the resumé, letter of application, and application form.
- Complete the teaching strategy on interviewing. Video-tape, play back, and evaluate.
- Evaluate career action plans. Determine what long- and short-term goals are necessary for fulfilment.
- Arrange individual conferences with learners.

Thursday

- Conduct course and instructor evaluations. Write letters of appreciation to employers. Get ready for class graduation and party.

Friday

- Class graduation and party.

Preparing for the Program

All the material developed ***and outlined in this guide was identified by the Provincial and National Advisory Committees and the June 1986 Conference of Instructors as highly important in any Women in Trades and Technology exploratory program. Not every course, however, will have the same timeframe, availability of resources, or learner population. Modifying and drawing from the resources of this guide will be left to the individual instructor.***

There are logistical and organizational details that must be considered in every course. The following is a list of questions, activities, items, and issues that should be addressed by the instructor in planning a course.

1. It is useful and important to identify the participant group before starting to design the specific course. Instructors should ask themselves: What are the characteristics of the learner group? Have they worked before? At what kind of jobs? Is there a high percentage of social assistance recipients? What is their average educational level? What kind of career aspirations are indicated?
2. How long is the course? Does it include the work experience portion? Is it possible to introduce new areas that may be important but have been left out through oversight?
3. What employers are in the local area, and what types of work do they represent? Who knows them and can assist with an introduction? It is always easier to meet and request work experiences from employers who have been introduced, though the experience gained by "going in cold" can help instructors assist learners with the same kinds of tasks. It is important to prepare a description of the course and the intended aims and goals, including those of the work experience, that can be provided to potential employers. Face-to-face contact with the employers will help facilitate the co-operative atmosphere so essential to a good work experience component.
4. What sections of the curriculum guide and which technical areas will be emphasized? What resources exist in the local area? (This should include resource people as well as resource materials.) What shops and technical instructors are available and at what times? Scheduling will be a creative challenge! It is useful to prepare a written overview that includes a course

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description as well as the intended outcomes of the technical sessions. This will help other technical instructors develop appropriate units for use with the class.

5. Contact local tradeswomen, technicians, technologists, female entrepreneurs, active women union members, etc. who might be willing to serve as role models on panels and other presentations. Ask around: one name often leads to another. It is also useful to check with the technical instructors for names of previous graduates. Contact local or provincial Women in Trades and Technology (WITT) groups, Women in Sciences and Engineering (WISE) and the Society of Canadian Women in Science and Technology (SCWIST) for further information and resources. The Province of British Columbia's *Equity in Apprenticeship Resource Kit* describes role modelling initiatives and resources available both nationally and within provinces across the country.
6. Meet with representatives from the various funding and support agencies to identify ways to assist each other. Be up-to-date with any changes or new programs that have come into effect.
7. Choose or modify the sample units or portions of units from each section and make up a tentative schedule. Be willing to be flexible, as this course uses many outside resources that must all be co-ordinated within a successful program. At the same time, ensure that learners can rely on the structure of the course and count on its stability.

Objectives of Hands-On Components

What to Say to a Technical Instructor

developing a module for this course. The objective of the hands-on portion is to create learning experiences that provide learners with some incentive to pursue training and employment in a variety of disciplines. In addition, it should provide enough exposure to the reality of the training and work environments to enable learners to evaluate their personal suitability for each area.

Suggestions for meeting this objective include:

- create a two-to-five-day introductory, exploratory experience, covering the basic components and career opportunities of this field (for people who have had little or no previous exposure)
- present an overview of the variety of occupational areas within the discipline, their training requirements, and job availability
- choose a few specific areas where hands-on participation is possible. Provide the basic theory introduction necessary to the hands-on activity, and supervise the learning experience. Include any safety training necessary to the success of the module. If possible, include an activity with a tangible result, one that might even be taken away by the learner.
- as this covers very technical areas, please try to simplify wherever possible. This field is an option, it should not be presented as insurmountable.
- it is important to understand that learners may lack self-confidence, and can be encouraged in a positive direction with the appropriate attitude and sensitivity by the instructor. Instructor willingness to participate is essential.

Teaching and Assessment Strategies[3]

***Many of the activities suggested** by this guide contain references to teaching strategies that facilitate the development of proficiency in personal and technical skills, and "employability skills": critical thinking, problem-solving, design and trouble shooting activities, and inquiry techniques. All ultimately assist in developing the variety of qualities needed to serve the learners/workers and their employers in the future.*

Most strategies are self-evident in their capacity to provide assessment information.

The descriptions of the activities do not provide extensive detail on the nature of individual strategies nor how to employ them. Some strategies, however, are of particular importance to this curriculum and respond more precisely to the needs of women learners. The instructor will find some of those strategies described in this section, using examples from the curriculum guide. It is important to be aware that there are often learning style differences between men and women, and particularly so between groups of all men or all women. Accordingly, additional information on related learning style theories has been provided which can benefit both men and women.

Much of the current literature on effective teaching seems to take into account an understanding of the needs of people with "relational learning styles," and suggests teaching practises that respect the inherent knowledge base of learners while increasing their analytical skills and information base. Additional references are provided for those instructors who wish to further explore this area.

Teaching strategies provide learners with an overview of technical fields, demystify technical learning, teach some basic skills, develop an understanding of the depth and breadth of the practical and academic knowledge required to be successful in a field, and provide a safe, supported learning environment in which to experiment with the learning of technical skills and abilities. It is important that participants leave with a feeling of "Yes, I can do that," and "No, it isn't done with smoke and mirrors."

These objectives, which lead to a more self-assured and positive attitude, can be best accomplished through actual "hands-on" experience with real bits and pieces. It is also important that

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[3] This material was developed for both WITT National Network and the Orientation to Trades and Technology Curriculum Guide of the Province of British Columbia. It is used with permission.

participants "take away" some new skills and tangible evidence of their accomplishment, such as:

- cut and welded pieces
- the electronics kit they have assembled
- actual blueprints or technical drawings completed
- a tool box
- written plans of action for managing life skills
- lists of strategies for overcoming internal and external barriers
- confidence in using the Internet.

It is not essential to deal with technical areas in great depth, but to provide an overview, relate the material to applications familiar to the participants' lives, illustrate the academic requirements for success in the area, and do so with a hands-on model through which competency can be demonstrated.

Workplace terminology

Language is often used as an exclusionary tool in technical areas, as it often is in academe. Attention needs to be focused on assisting learners to demystify and develop an understanding of technical terms and processes, and the names of tools and their uses. This enables them to feel comfortable and "at home" in previously unfamiliar or excluded areas. Conversing effectively with trades and technical instructors, and with other learners more familiar with these areas, will increase learners' self-esteem and endorse their sense of purpose.

Participation in Group Activities

Group activities assist in developing communication skills, presentation skills and teambuilding skills, as well as fostering an environment of trust and support with a feeling of community. They are a timely and effective way to bring out issues and solutions with a large number of people.

Some considerations need to be addressed for women who have suffered from trauma or abuse. Instructors need to be aware that trauma affects cognition and therefore may need to call for special measures: take time restraints off testing procedures; assistance in facing fears related to pulling down welding helmets, climbing ladders or other challenges. Learners always have the right to choose not to participate in group activities. It is important to keep an eye out for the myriad ways that triggers can occur in everyday tasks. It is not necessarily the job of the instructor to act as a counsellor, but it will be essential to be able to identify and refer the learner to appropriate community support people/resources.

As a whole, the program is to develop not only technical skills, but positive interdependence, individual accountability, group processing, social skills and face-to-face interaction. This can be true for instructors as well as learners. Encouraging some of the technical or academic resource instructors to participate in some of the group personal development activities sets the stage for them to understand and become sensitive to some of the cultural diversity issues being addressed.

Critical Thinking

"Making wise choices about what to believe and what to do requires the ability to think critically - that is, to analyse the arguments presented, make inferences, draw logical conclusions, and critically evaluate all relevant elements, as well as the possible consequences of each decision... The ability to critically analyse issues that affect personal, social and political decision making will distinguish those who feel in control of their lives from those who do not."[4] Thinking critically will also empower learners to examine techniques, designs, solutions and descriptions for bias, and to create their own solutions that meet the needs that they define. It will enhance the definition of those needs. Critical thinking includes the skills of analyzing, evaluating, synthesizing, applying, contrasting, verifying, explaining and hypothesizing. Personal characteristics needing development for this include "openness to others' ideas and arguments, confidence in one's own ability to solve problems, curiosity, the desire to look for meaning in complex situations, and willingness to think adventurously." (King, "Inquiry as a Tool in Critical Thinking") Activities to develop and enhance critical thinking skills are interspersed throughout many of the units of this curriculum. (See Recognize, Adapt and Influence Workplace Culture, Develop Technological Literacy, Investigate the Environment Sector, Explore the Components ... of Forest Resource Technology, Examine Labour Market Trends ...)

Prior Learning Assessment/Transferability of Skills

Prior Learning Assessment provides an opportunity to reframe one's life, home and work experiences in terms of their usefulness in new situations and contexts. It may consist of comparing a particular set of skills learned outside the country or province with the skills required for an occupation [assessment of foreign credentials] in your present situation, or it may mean analyzing the skills developed managing a home or small business to determine their application to new occupations or work situations [transferable skills]. It may also mean describing the learning that has taken place in a particular situation, so that it may be reviewed for credit or advancement by another instructor or institution [portfolio]. It also provides a context for looking at the way in which the skills the learner has previously developed may be transferable to new areas of expertise, e.g. pattern making, cutting, fitting, fastening and finishing are skills applicable to sewing, welding, carpentry, architecture, and steel fabrication to name a few. The ongoing use of this strategy assists relational learners to integrate, esteem and expand their knowledge base. (See the Practise Self-Assessment unit, and Portfolios in this section)

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[4] King, Allison "Inquiry as a Tool in Critical Thinking". *Changing College Classrooms* pg 19

Relational Learning Styles[5]

Research on learning styles indicates that 93 per cent of the women in Women in Trades and Technology courses in Ontario, and 60 per cent of the men in a similar control group, are relational learners. What this indicates is rather than learning primarily by lectures and debates (mental learners), or primarily by physical manipulation (physical learners), the vast majority of learners learn best by a series of methods, not as commonly used, which are outlined in this section.

Before the advent of this research, many instructors of women in Orientation to Trades and Technology type courses have intuitively tried to familiarize and orient their learners by demonstrating the correlations between the objects and activities involved in the new skill areas, and how these are similar to known activities and tasks. An example would be a description of tasks involved in sewing: pattern making, measuring, cutting, fitting, fastening, and finishing. An instructor might demonstrate that these same tasks are the bulk of the activities involved in carpentry, metalwork, and fabrication of many kinds, and are even applicable to chemistry; only the materials used really change. The learners understand that they already have a familiarity and relationship with the work that allows more learning to take place. It is always easier to learn something if you think you already know something about it.

Key phrases for an instructor of female relational learners include the following:

Feelings Set the Conditions for Learning

The relational learners' process starts with the personal self and feelings, and then goes on to focus on work. One of the most common questions in a class of this nature is Why? Why is it important for me to learn this? What does this have to do with my life? Why do these things work as they do? Should the instructor not provide opportunities for the learner to make a personal connection with work, the learner must devise ways of understanding this personal relevance and then often takes longer to learn the material.

Learners will have fewer blocks if they:

- can identify the relevance of the material
- can identify with the instructor's experience personally; this allows them to feel relaxed

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[5] Adapted with permission from *Instructors' Handbook Working With Female Relational Learners in Technology and Trades Training* by Dr. Carol Brooks, Ontario Ministry of Skills Development, 1986

- feel the instructor is interested in their work
- hear encouragement at every stage of the process.

Note: At first the learner will work to please the instructor. Then, she will work to satisfy her own goals. At this point, she assumes responsibility.

Relating-Linking-Connecting Initiates the Learning

In addition to being able to identify personally with the instructor, a learner's learning is prompted if she can relate by:

- linking new material to things already known to her; this allows the learner to draw on discreet or intuitive knowledge
- personalizing tools and equipment; the computer industry has picked up the importance of this concept to novice learners in its promotion of "user-friendly" resources
- hearing stories about the material or about how the instructor learned some of these things

Verbalizing by the Learner Stimulates the Learning

It has been said about relational learners, "They don't know how much they know until they say it." Some ways in which the instructor can help learners verbalize include the following:

- Insist that learners use and speak with the vocabulary of math, science, technology, or trades. (Thingamabob just won't do!)
- Encourage verbal repetition of vocabulary until learners use the technical words easily.
- Set up simple verbalizing opportunities to acquaint learners with unfamiliar words and to relax them about speaking in a group.
- Direct one learner to explain something to another.
- Set up small group discussions (5-6 learners at compatible levels) so that they can verbally analyse the connections between theory and application.
- Encourage the verbal shift from "dependency" or "rescue-me" language (often called "whining" by instructors and learners alike) to independent problem-solving language (direct, clear.) Working with learners on this requires skill and focus by the instructor.

Note: The learner requires practise in talking about what she is working on - from simple to complex verbalizations. As she becomes comfortable with speaking, she will take more responsibility for her work and will feel more connected to or stimulated by it. Beginning to speak will prompt her to differentiate herself from others and to see more clearly the character of her own abilities. She will move from indirect expression to direct language, which permits her to describe her activities accurately.

Hands-On Application Makes The Learning Complete

Application allows the learner to experience the relevance of her studies, to practise, and to involve the physical body. This involvement must come early in the learning process. The instructor can:

- give demonstrations of correct procedures
- set up hands-on applications individually or in small groups
- allow time for repetition of concrete or physical tasks so that the learner can see and begin to measure her improvement
- ensure that learners understand the physical movements required of them (either through demonstration or direct physical assistance.)

Feedback from the Instructor Sustains the Learner's Involvement

Women reported that the five most important tools in the learning process are:

1. being able to practise
2. talking with others while learning
3. being able to take their own time
4. having fun while learning
5. having their own routine.

How Women See Themselves As Learners

Women reported that they learn best if presented with an overview of the material during which they can

- relate it to themselves
- see a demonstration
- go back and forth between application and discussion

The sequence in which they observed their learning takes:

- understanding the value of what needs to be learned
- hearing what needs to be learned
- seeing what needs to be learned
- talking about what needs to be learned
- doing what needs to be learned

When asked how they describe themselves when they are able to learn in their own way, they said

- thorough
- serious
- taking their own time
- using a lot of examples
- practising.

The word most often listed was "thorough." This response suggests a value attached to work. It is important to the women to have enough time to attend to detail and to do the job from beginning to end. Many women view the job as a single process and do not know how to break this process down into parts. This quality has made employers of these learners report back to instructors with praise for their thoroughness. This same quality can be detrimental to learners accepting opportunities for learning. Instructors report that if a woman knows how to do most of the job but not all of it, she will say she can't do it. Instructors find that at the beginning of a course it is useful to work with women to break tasks down into small, manageable steps.

Women are aware that in order to be thorough they need to take their own time. They also know that if they are able to practise, they will eventually pick up speed and be able to maintain thoroughness under pressure of time constraints.

Being serious about their work influences women in the friendships they decide to drop or build during this period of transition. They talk about having to learn not to care about other learners who do not take themselves seriously.

Women learners stated that a good instructor is someone who:

- interacts with the learners
- goes back and forth between theory, demonstration, and hands-on application
- is sensitive to learners' pacing
- encourages discussion
- pays individual attention to learners' work
- provides support and help with personal growth issues.

Suggested Teaching Strategies

Recent writings on effective classroom techniques (see resources for this section) highlighting "collaborative learning environments," "alternatives to lecturing," "fieldwork," "accommodating different learning styles," and "motivating learners" reflect teaching strategies that are well suited to relational learners. Strategies outlined here are used extensively throughout the *Orientation to Trades and Technology Curriculum Guide and Resource Book with a Special Emphasis on the Needs of Women*. It is important to note that instructors cannot be expected to focus and teach to each individual learning style in their classroom, but if they use a variety of educational techniques and teaching strategies, learners will find some that particularly meet their needs and may well extend their own learning capacities as they work to meet the challenges of others.

> Students learn best by doing, writing, discussions, or taking action, because active learning situations provide opportunities for students to test out what they have learned and how thoroughly they understand it. ....The more frequently students apply new concepts to new situations, the better they will be able to remember and use those new concepts. So, don't tell students when you can show them, and don't show them when they can do it themselves. Let students summarize, paraphrase, or generalize about the important ideas in your class through group discussions, skits, role playing, simulations, case studies and written assignments. (Sources: American Psychological Association, 1992; Lowman, 1984; McKeachie, 1986)[6]

Cross Cultural Awareness

> An increasing proportion of students are not native English speakers; many bring different traditions with them and offer opportunities for the expression of diverse viewpoints that were not available with a more homogeneous student body. This greater variety of cultures in classrooms also brings with it new occasions for misunderstanding and prejudice unless traditional assumptions about cultural differences and minority groups also change.[7]

Institutions and agencies must recognize that they are preparing learners and workers for the global market, as well as the growing diversity that is Canada. This means modelling and developing environments based on mutual knowledge and respect. It is up to the instructor to foster and manage this change process in the classroom. Just being neutral is not enough; being inclusive requires conscious, respectful and non-judgmental exploration of cultural differences among learners, and an understanding of how those might affect the learning process. By encouraging the integration of diverse experience and fostering respect for different communication styles, a welcoming environment is created.

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[6] Davis, Barbara Gross. *Tools for Teaching*. "Helping Students Learn." pg 181. See this book for further study in this area.

[7] Halpern, Diane F. "Rethinking College Instruction for a Changing World." *Changing College Classrooms*. San Francisco: Jossey-Bass Publishers. pg 3.

This can be accomplished through the use of simulation games, and exercises such as BaFa' BaFa' (see Resources for this section), Power Shuffle, Stand and Declare, and other experiential exercises and discussions which can take place in the classroom whenever situations arise that indicate potential cross-cultural misunderstanding or that might benefit from a cross-cultural perspective.

Cross-cultural can be defined quite broadly as well: rural and urban; male and female; heterosexual and lesbian/gay; diversity of ethnic/aboriginal backgrounds; rich and poor; those with disabilities and those without at the present time: all experience the world from unique perspectives, and are often the casualty of stereotyping that can limit their successful integration into the labour force. All can benefit from an increased understanding of issues, values, assumptions and behaviours, and that can lead to a reduction in prejudice and discrimination and enhanced critical-thinking skills.

(See "Practise Self-Assessment," "Recognize, Adapt and Influence Workplace Culture" and "Deal Effectively with Harassment" Units and *Gender and Diversity: Creating Inclusion in the College Environment* and "Experiential Approaches to Cultural Awareness" in *Changing College Classrooms* for useful exercises.)

Class Discussion

Class discussion can be facilitated by the instructor, or by one of the learners developing expertise in the area. It is a useful strategy in a wide range of subject matter. Learners can prepare for components of the discussion with research outside class, or come fresh to the discussion drawing upon their life and work experiences. Discussions can take the form of responding to a set of the instructor's questions, asking learners what they think the most important questions to address might be; it could be in response to a video or presentation, a set of assigned readings, or a field trip.

- The ideal class size for discussions is 10-16.
- To arrange a room for such a discussion, make sure people can see each other by placing seats in a circle, horseshoe, or square.

- Clarify the objective of the discussion - what the topic is and the ground rules (e.g., everyone's contributions will be valued; a wide range of points of view will be expressed, try to understand points of view different from your own.)
- Frame several thought-provoking starter questions to begin the discussion — don't be caught with nothing to say.
- The instructor's role is to facilitate the discussion.
- Try to bring reluctant members into the discussion with encouraging questions. This means carefully monitoring the discussion and the amount of speaking time each individual is using. Take steps to ensure that one or two people do not dominate the discussion. This combination of encouragement and knowing how and when to limit discussion takes skill and practise.
- Be prepared to clarify remarks, but don't inject your own point of view. Really work at hearing and paraphrasing the participants' contributions.
- Try to summarize the discussion at the end, but be sure that the summary reflects the diverse viewpoints presented.

An essential skill in conducting group discussions is the effective use of questions. Here are a few tips on how to use questions to stimulate discussion:

- Ask for more information to help clarify or make the response more specific: "Can you give me an example?" or "What exactly do you mean?"
- Restate what you have heard. Also called paraphrasing, this technique lets the participant know that her ideas have been heard correctly or gives her the opportunity to correct - misunderstandings. It also serves to encourage the speaker to expand on any point made.
- Use questions to introduce larger issues and develop critical thinking: "Can we take this one step further?;" What solutions do you think might solve this problem?;" "How does this relate to what we have learned about..?;" "What are the differences between...?;" "How does this relate to your own experience?;" "What do you think causes....?;" "What are the implications of.....?"
- Accept controversial answers to create an atmosphere of open inquiry and debate. Encourage learners to assess and evaluate each other's solutions.
- Ask the same question of several participants to elicit a range of responses.

- Use open-ended questions (those that can't be easily answered with a simple yes or no) to encourage participants to provide longer, more thoughtful answers.
- Try not to answer your own questions.
- Avoid rhetorical questions - those that have an obvious answer: "Don't you think that...?" Try instead to make a statement and invite a reaction: "[Someone] thinks that.... What do you think?"
- Encourage learners to share knowledge and experience based in their cultures, without asking them to be spokespersons for that culture. Ask learners to share a "critical incident" from their own lives that relates to the topic.
- Look for non-verbal cues. If someone seems perplexed, try: "You seem puzzled, __________." If she seems angry, try: "You seem to feel differently, __________. Could you give us your point of view?"

To help your participants look at their ability to participate in group discussions, you might ask one of the learners to keep track and provide feedback on the process. Have them look at these factors:

- Who talks? For how long? How often?
- Whom do people look at when they talk: individuals, the group, nobody?
- Who talks after whom, or who interrupts whom?

As instructors observe your learners' behaviour and their own, they think about ways to increase productive activities and decrease counterproductive ones. A trusted colleague or a faculty development expert can analyse and review participation.

(For examples of class discussion activities, See "Recognize, Adapt and Influence Workplace Culture," "Deal Effectively With Harassment," "Manage the Requirements of Home and Work," "Develop and Practise Assertive Skills," "Use Safe Work Practises," "Develop and Maintain Occupational Fitness," "Develop Technological Literacy," "Examine Training and Employment Options," and "Requirements in Trades and Technology," "Develop Job-Search Techniques," "Describe Small Business Ownership," "Examine the Issues of Affirmative Action/ Employment Equity/Workforce Diversity.")

The following list provides a useful framework for instructors to use in evaluating participation in class discussions:[8]

Initiating:	proposing tasks or procedures, defining problems, identifying action steps
Eliciting:	requesting information, inviting reactions, soliciting ideas
Informing:	offering information, expressing reactions, stating facts
Blocking:	introducing irrelevancies, changing the subject, questioning others' competence
Entrenching:	expressing cynicism, posing distractions, digging in
Clarifying:	clearing up confusions, restating others' contributions, suggesting alternative ways of seeing problems or issues
Clouding:	creating confusion, claiming that words can't "really" be defined, remaining wilfully puzzled, quibbling over semantic distinctions, obscuring issues
Summarizing.	pulling together related ideas, offering conclusions, stating implications of others' contributions
Interpreting:	calling attention to individual actions and what they mean
Consensus proposing:	asking whether the group is nearing a decision, suggesting a conclusion for group agreement
Consensus resisting:	persisting in a topic or argument after others have decided or lost interest, going back over old ground, finding endless details that need attention
Harmonizing:	trying to reconcile disagreements, joking at the right time to reduce tensions, encouraging inactive members
Disrupting:	interfering with the work of the group, trying to increase tensions, making jokes as veiled insults or threats
Evaluating:	asking whether the group is satisfied with the proceedings or topic, pointing out implicit or explicit standards the group is using, suggesting alternative tasks and practises

Small Group Tasks/Discussion/Dyads

Collaborative learning environments have been shown to foster greater learning and retention than other modes of instruction (e.g., lectures). These environments can be structured as formal study groups, informal discussion groups or task-oriented groups. They foster cooperation, creativity, group responsibility, the exchange of constructive criticism, the development of conflict resolution skills, group problem-solving skills. They provide an opportunity for learners to get to know each other informally.

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[8] Davis, Barbara Gross. *Tools for Teaching.* pg 73

Instructors need to foster a sense of positive interdependence where group members experience a sense of responsibility for their team-mates. Groups can be as small as two, and more than six can compromise engagement and participation.

Small group discussions provide an environment where those who may be reluctant to present their ideas in a large group may find some comfort. Using dyads (two), triads (three) or small group discussions enables participants to take a more active part in developing ideas and solutions. It gives excellent practise to team work development, and can enhance presentation skills as the groups report on their discussions. Small groups can be given individual tasks that when put together with the other groups will form a cohesive whole: a good example of the direction much industrial design and production has taken today. One variation/example of this has the group divided into pairs, each pair being given the question, "Who are the key professionals, besides the architect, involved in designing, financing, and constructing a building?" Each pair generates as many responses as possible in three to four minutes. Then each group joins with another, and compares their lists, adding what may have been missed. This is a good ice-breaking activity, as it provides an opportunity to get to know others in the class.

For other types of discussions, break into subgroups of four to six participants. Make sure the participants in each subgroup are facing each other, to facilitate interaction. Clearly state the problem or issue. You could write it on the board, circulate handouts, or use an overhead projector to ensure that everyone understands what is to be discussed. Have the group members select a recorder/spokesperson to keep track of the ideas presented. Briefly discuss approaches to the issue and deal with any questions. Have participants discuss the issue for a designated period of time (5-10 minutes) while you circulate from group to group assisting as necessary. If discussion falters, refocus on particular issues, or shorten the discussion time; if an intense, profitable discussion ensues, you may want to extend the time limit.

Call time, and have the spokesperson(s) make a brief report on discussion(s). To avoid repetition, ask speakers to add only points that have not been raised. As the information is presented, record the main points on the board or flipchart. Be sure to accept the points raised uncritically, but clarify when necessary: "So you're saying that...;" "If I understand you, you felt..." After you've recorded all the points raised, you might lead into a general discussion of the issue. To do that, look at the techniques identified in this section under the heading, Class Discussions.

It would be useful for Task Groups set to work on a particular project, development initiative, or research project, to have an opportunity to evaluate the group effectiveness. Ask the participants to highlight positive feedback for each of the group members, along with suggestions for improvement for each group member in their work with the group. At the end of the task, individual members could write a brief evaluation of the group experience. It would be important to outline such expectations at the beginning of the group.[9]

Dyads and triads can be used to reflect on the topics being addressed by the class, or to role play situations, with the third person playing the observer and giving feedback.

Role Models

Using role models as adjunct instructors and as panel participants is a very effective means of demonstrating for learners that women in similar situations can accomplish what they are setting out to do. Ask the participants who they would like to hear from...who they would like to invite… who they would like to meet. What kinds of occupations they would like to see represented? Ask if they know anyone who might be useful to bring into class for a discussion. Involve learners in the process.

Case Studies[10]

A case study is a written narrative (e.g., story, drama, news/ magazine article) developed around a set of issues that present a specific "real-life" dilemma such as a harassment situation. The learners' approach to broader issues and several points of view can be guided by a set of focused study questions.

After reading the case narrative, learners work in small groups to discuss a set of questions designed to focus on the problem and its possible solutions. The focus questions should:

- focus on higher-order thinking skills such as decision making, problem-solving, or critical thinking
- encourage students to examine issues from a personal perspective
- stimulate critical thinking about real-life issues.

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[9] Adapted from: Davis, Barbara Gross. *Tools for Teaching* "Collaborative Learning" pg 153.

[10] Material on Case Studies and Key Visuals has been adapted from "Selected Strategies for Instruction," in both the *Career and Personal Planning* and *Geography 12 IRPs* and used with permission from the Province of British Columbia

Then, debrief with the whole-class, fostering a continued questioning atmosphere until all in the class are satisfied that the best solutions have been reached. Case studies solutions can be role played, which may bring out areas that need further clarification and resolution.

Case studies, whether prepared beforehand by the instructor, written up in class time on 4x6 cards by learners from their own experience or projection, or taken from newspaper or magazine accounts, are an excellent vehicle for "real world" practise of strategic problem-solving and values clarification. This strategy is especially effective in harassment and assertiveness training workshops, as well as problem-solving, decision making and job search exploration.

Key Visuals

Key visuals enhance memory and analysis by keying structure and content without depending completely on print. Word webs, mind maps, photographs, illustrations—images that convey information without relying on text—are key visuals. They are often used in examining the ecology of an area, or a technology design project.

Key visuals are images that convey concept as well as content; they are used as aids to learning that can trigger memory and inspire the imagination. They can be a powerful addition to direct instruction (and are especially useful for teachers with ESL learners in their classrooms.)

Some examples of key visuals are:

- word web or mind map in coloured chalk on blackboard or coloured felt pens on whiteboard
- chart paper or overhead projector (i.e, web of forest uses; web of technology design process)
- word web or mind map made with carefully chosen collages, drawings, cutouts (collage of media representations of women in advertising)
- word and image mobiles that "advertise" a key concept (elements required for a complete electronic circuit)
- posters or illustrations from key videos, films, or books
- ongoing graph of results of data gathering
- a map that changes with addition of new data (computer technology exercise.)

Role Play

Not everyone feels comfortable in this medium. Participants should be encouraged to try it out, but all learners have a right to define their own boundaries. Some may wish to just observe. Point out that practising these skills makes it easier when confronted with real situations where they might be used, but respect their decisions. Cultural differences may have an impact here.

Role play provides an opportunity for learners to examine their immediate responses as identified characters, and to improvise reactions, problem-solving and solutions from the perspective of the person whose role they are playing. Based on the concept, "Don't judge until you have walked several miles in another's shoes," in cross-cultural explorations this can yield an important potential learning experience, and should be encouraged. As well, in assertiveness or "dealing effectively with harassment" training situations, it provides much needed practise of appropriate responses to difficult situations.

The instructor can provide the "situations," or these can be generated by the learners, either in a group brainstorming or individual notations on 4x6 cards. Many workshop resources come with ready-made role play situations. Role plays can be observed and commented upon by the class, or by only another individual observer.

Sufficient debriefing time is needed to analyse the experience. Participants will need to talk about how they felt at certain points during the role play, and perhaps indicate what might have been done to change the situation. Then, with changes, the role play could be tried again.

Self-directed, Independent Learning

Self-directed, independent learning as an instructional strategy consists of a time-limited research project on a topic and method(s) of inquiry and reporting chosen by the learner in consultation with the instructor.

Learners use research methods such as creative problem solving, individual research, brainstorming, interviews with experts, software databases, case studies, and communicating (by telephone, Internet, fax, and/or letter) with resource people directly to gather up-to-date information for their chosen topic.

The method of reporting is usually chosen to enhance or use skills in areas most suited to the needs, strengths, and background of each learner. To start the process of independent learning, learners can:

- begin collections of articles, pictures, and references
- maintain portfolios of in-progress and completed projects (see Portfolios)
- keep a daily or regular journal of their thinking about the concepts and issues being raised, their reactions and/or growth in thinking, and about the development of their personal goals.

Each learner's work should be evaluated in terms of the agreement or contract and report criteria set up in the initial consultation with the Instructor.

It is important for learners to have active roles in the evaluation process. A possible strategy might be for them to commit their thoughts and perceptions about their issue or topic to paper before beginning the project, and another paragraph at the conclusion of the unit about how their attitudes and feelings may have changed (e.g., "What I think I know about..." vs. "I now know that...".) This would then form part of their portfolio.

Portfolios

The portfolio is a body of work, chosen by the learner with advice from the instructor, that represents the quality and content of the learning experiences and achievements of a particular time or course of study. It can be used for evaluation, as a personal record of progress, a reflection on the learning process, and a representation of the work in a particular subject or a representation of all work over a period of time. Journal writing, projects, tests, constructive criticism, etc. all form the basis upon which some assessment can be made by both learner and instructor. It is a way to communicate about the learning process to oneself and others, and can demonstrate the initiative and creativity of the individual, breadth and depth of the material covered, and how it has been assimilated.

Design portfolios, in technical areas, tailored to each learner's style and abilities can provide an important interactive process for instructor and student evaluation of learning and identifying where knowledge and process gaps are occurring. They can include research and investigation; idea generation; flow charts for development and planning; testing and evaluating solutions.

Instructional Media and Technology

It's always important to remember that instructional media also refers to the more simple tools:

- chalkboard
- transparencies and overhead projectors
- slides
- films and videotapes.

These have been tried and found most useful in many instructional situations - and will continue to provide important instructional tools in the hands of the instructor.

Since this is a technically based program, it will also be important to use other newly developed technologies in the instructional process, both to inform learners of potential occupational areas, and to develop their skills and familiarity with technologies currently found in industry.

Computer-mediated instruction gives learners a background in the use of technology that is increasingly required to participate successfully in the worlds of work and higher education. The technology can include:

- personal computers
- telecommunications equipment such as fax machines and/or modems for Internet access
- video and laser disc, CD ROM equipment
- interactive software.

It is essential that instructors feel comfortable using the tools and equipment that they are recommending to learners. After deciding to use computer technology to reach a particular instructional objective, the next step is to select the appropriate combinations of hardware, software, and instructional strategy or strategies to best meet the learning objectives. Just as "user driven design" and "appropriate technology" are discussed in the Develop Technological Literacy Unit, it is essential for the instructors to determine the most appropriate use of technology for their classrooms.

Field Studies[11]

Often, the most important and meaningful learning occurs outside a classroom. Opportunities to arrange and participate in several field studies encourage learners to learn by observing, taking notes, listening, and interacting with the subject of the study.

There are several different types of field activities. These include a field study for the class as a whole, exploring on-site something that is being learned in class, or a trip to an entirely new and different environment to give the learners a feel for the real world of work. As well, individuals or groups of learners can do some investigative work on their own to share later with the class.

They can also exercise their organizational skills as they plan and arrange projects based on a specific assignment. These projects may involve a single learner, a learner with partner, or a larger class group. Learners could be asked to keep journals that detail the planning and indicate what they have learned from the study. In other situations, learners could develop individual or multi-media class presentations on a project or study. Learners should discuss any field study project with their instructor who might identify resource people, provide letters of explanation, and arrange for necessary equipment (cassette or video recorders, etc.).

(Activities involving fieldwork are included in "Work Experience," "Study Research and Presentation Skills," "Develop Technological Literacy," and "Investigate the Environmental Sector," "Manage Childcare" and other units. Additional information on conducting field studies can be found in the *ABE English Resource Kit* and in the *Science and Technology 11 Instructional Resources Manual*, "Fieldwork" and "Helping Students Learn" in *Tools for Teaching*, and in *Selected Strategies for Instruction*.)

Brainstorming

This technique is designed to tap into the collective energy, creative potential, knowledge, and ideas of a group. (A brainstorm is literally a sudden idea, a flash of inspiration.) In this context, it is an excellent vehicle for generating group participation and emphasizing the value of collective thinking. It also shows group members that through mutual respect they will be able to work together without fear.

It is important that all participants are aware of the ground rules before the brainstorming session begins. The participants must know that all ideas are accepted and recorded - even the craziest and seemingly useless. No discussion or criticism is allowed at this point, as the key to brainstorming is quantity; evaluation can be carried out later. Encourage participants to "play off" ideas - expanding, combining, and modifying each other's ideas.

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[11] Much of the material in the following three sections is from the ABE English Resource Kit, BC Ministry of Advanced Education and Job Training, 1987 and is used here with permission.

Use no more than 8-12 minutes to generate ideas.

- Have the group face a blackboard or flip chart.
- Clearly state the topic.
- The group can be any size, but 5-16 is ideal.
- The topic could be a solution to a problem ("How can we help each other overcome technophobia?"), associated images around a word ("What do you associate with the word work?"), ideas on a topic ("What are the advantages to living in a small town?"), or subjects for an interview or field study.
- Have participants come up with as many ideas related to the topic or question as possible in a particular time frame, all ideas being valid.
- Once the ideas have been exhausted, or time is called, examine the list and evaluate them. Which are the most interesting, feasible, and potentially productive?
- The final step is to apply the information generated in the brainstorming session to your task. Now you may have the basis for class or small group discussion, questions to put forward for a panel discussion, or sufficient information to write a paper.

Whatever your task, brainstorming can be a valuable preliminary step.

Journal Writing

Journals can be used in a variety of ways. They can provide and develop as a creative outlet, to try out different perspectives before expressing them more publicly. Often, they are a documentation of personal growth and a reflection on experiences. Sometimes they can be used in conjunction with instructors to provide feedback on what was learned in a particular situation and can form part of one's portfolio. Frequently, they can be a sounding board for ideas or theories or opinions. They can be a tool to help develop self-discipline.

Writing can be a powerful tool for reflection and self-exploration, and for testing out one's own learning; however, because of the emphasis on form, content, and writing for an audience, it is rarely used in this way. Journal writing gives the writer the chance to write in the "expressive" mode - writing can be used to explore thoughts and experiences without concern for spelling, grammatical correctness, or audience reaction.

63

Journal writing provides an opportunity for the learner to record, analyse and reflect on the every day experiences that contribute to growth as learners and workers.

In addition, journal writing provides a chance to write on a regular, sustained basis. Like reading, writing fluency comes from practise. In this case, the skills of "externalizing" words and ideas - removing them from inside and writing them down on paper - are practised. This "sustained silent writing" can also improve spelling, grammar, and other skills just through practise and increased relaxation with writing. As these elements are not marked or evaluated, many inhibitions or worries about writing may slowly melt away.

Remember, a journal belongs to the learners. Whatever they write will be read only by the instructor (unless permission is given to do otherwise), and the journal should only be read to assess whether a learner is maintaining it. (Some instructors like to provide personal reactions, creating a dialogue, but this can be negotiated.)

The easiest way to keep up with journal writing is to set aside 5-15 minutes daily (unless otherwise indicated.) In a classroom, a period of time can be set aside when everyone writes in their journals simultaneously. Learners should try to get in the habit of writing daily - this way journal writing will be most beneficial.

Checklist for a Gender Sensitive Learning Environment[12]

The following points are designed to assist in promoting a welcoming, inclusive atmosphere for women in classrooms.

Gender Inclusive Language

- Are you using gender inclusive language?
- Have you discussed with colleagues which terms are appropriate to use when referring to female students.
- Have you reviewed resources such as the *Guidelines for Gender Sensitive Language* from the Ontario Women's Directorate?
- Are you performing a self-check for appropriate language in the classroom?
- Are you choosing terms carefully to avoid miscommunication due to literal interpretation?

Gender Inclusive Learning Aid?

- Have you purchased resources that present women in the text and in the illustrations?
- Have you reviewed current resources to ensure that they present women in the text and in the illustrations?

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[12] *WITT National Network. Construction Technology for Women Handbook.* Adapted with permission

- Are you using gender-sensitive video resources as listed in the curriculum guide?
- Have you provided students with appropriately sized tools, equipment and protective gear?

Gender Inclusive Resources

- Have you used TTO/BCW posters on the walls depicting women?
- Does your library have gender-sensitive resources to support the curriculum?
- When you contact companies for demonstrations do you request female representatives?
- Do you refuse inappropriate displays from companies and tell them why?

Gender Inclusive Instructional Design

- Does your teaching style reflect the needs of students?
- Do you incorporate learning examples that reflect practical experiences that the students can understand?
- Do you demonstrate applied math and science with real-life examples that students can understand?
- Do you invite representative women to demonstrate a variety of tasks in the class?

Learning Styles

- Have you encouraged students to identify how they learn best?
- Do you adjust your teaching style for different learning styles?
- Do you use a variety of techniques such as interactive materials and storytelling sessions to meet different learning styles?
- Have you helped students to relate comfortably to tools?
- Do you move between theory, demonstration, and application to reinforce concepts of learning?

Team Work Skills

- Have you identified role models?
- Are you practising gender-inclusive principles with counsellors and other members of the Project Team?
- Do you encourage feedback from students regarding gender sensitivity?
- Are you working with the Internet sites across the country to share experiences?
- Are you in contact with local WITT members to serve as resources or to provide names of role models?

RESOURCES

Books

Teaching Strategies

- Davis, Barbara Gross. *Tools for Teaching.* San Francisco: Published by Jossey-Bass Inc. 350 Sansome Street, San Francisco California, 94104. 1993. Ph: (415) 433-1740 Fax: (415) 433-0499

  Tremendously useful, practical book on the implementation of current teaching and learning strategies. Includes excellent section on Responding to a Diverse Student Body, as well as good material on Collaborative Learning and Instructional Media.

- Halpern, Diane F. and Associates. *Changing College Classrooms.* San Francisco: Published by Jossey-Bass Inc. 350 Sansome Street, San Francisco California, 94104. 1994. Ph: (415) 433-1740 Fax: (415) 433-0499.

  Terrific overall context book, with good specific sections on active learning, multicultural understanding, teaching with and about new technologies, and assessing teaching effectiveness and learning outcomes.

- Karre, Idahlynn. *Busy, Noisy and Powerfully Effective: Cooperative Learning Tools in the College Classroom.* Greeley, Colorado: 1994. Ph: (303) 351-2656 Fax: (303) 351-2983

  Miniature (38 pages) book with good background on cooperative learning. Specific learning activities are described. It would be easy to build those activities around the content an instructor would provide.

- Tiberius, Richard G. *Small Group Teaching: A Trouble Shooting Guide.* Toronto: Ontario Institute for Studies in Education, 1990. Available from University of Toronto Press: Ph: (416) 978-4738.

  An excellent how-to book.

- MacKeracher, Dorothy and McFarland, Joan and Wall, Marg and Wood, Bonnie. *Women's On the Job Learning: Developing a Portfolio,* 1991.

- Herberg, Dorothy Chave. *Frameworks for Cultural and Racial Diversity: Teaching and Learning for Practitioners.* Toronto: Canadian Scholars' Press, 1993.

  Herberg sets out to develop a framework for multicultural and race relations training: Learning about others occurs by learning about our selves and how we behave in different cultural settings. She describes the characteristics of a multicultural method: inclusiveness of language, mutuality, interdisciplinary knowledge, a frame of reference, objectification, and acknowledging differences.

- Hetherington, Cheryl. *Celebrating Diversity: Working With Groups in the Workplace.* Duluth, Minnesota: Whole Person Associates, 1995.

  A series of structured exercises for the workplace (and the college classroom) provide activities to examine stereotypes, confront prejudices, and appreciate the cultural diversity of colleagues (and fellow students) including experiential exercises designed to shape behaviour and attitudes related to a wide range of diversity issues.

- Segal, Sandra and David Horne. *An Introduction to Human Dynamics.* Topanga, California: Human Dynamics International, 1986/89/91/95.

  A clear look at mental, emotional and physical principles and their dynamic in the learning process.

Program Development Resources:

- Anderson, Barbara. *Employers' Guide to Community-Based Training,* Advocates for Community Based Training and Education for Women (ACTEW) 1991. Phone: (416) 783-3590, (416) Fax: 787-1500.

- Gordon, Shelley. *Operation Assess: A Pre-Apprenticeship Bridging Program for Women, Parts 1-3, Framing Women's Options.* May 1989. Ph: (416) 783-3590, Fax: (416) 787-1500.

- ANEW Program Manual - Apprenticeship and Non-traditional Employment for Women. Renton, Washington. Ph: (206) 235-2212. Fax: (206) 235-7864.

RESOURCES CONT.

Film and Videos

- "Backlash to Equity: First Nations People Speak Out." VHS, 33 minutes. With handbook. University of Western Ontario,1995.

  Developed to explore the current opposition and resistance to equity initiatives being experienced in postsecondary institutions and the community-at-large with a First Nations perspective.

Simulation Games

- *"BaFa' BaFa' - A Cross Cultural Simulation."*
  Simulation Training Systems, 11760-J Sorrento Valley Road, San Diego, California 92121
  Ph: (619) 755-0272 Fax: (619) 749-2089

  Simulation activities that place students in "foreign" cultures. Highly recommended at the Sr. Secondary level. Good potential with post-secondary learners.

- *"Barnga".* Maine: Intercultural Press. Ph:1-800-370-2665. Cross-cultural awareness game.

Ordering and Using Media Resources

Ordering

It is very important to keep in mind that films and videos are not always available on the day that they are needed. This requires a certain amount of flexibility in how you run your course, and a lot of lead time (at least two and better to have four weeks.)

Most film and video resources named in this guide can be ordered from their source through college audio/visual librarians. Contact information has been provided to assist in this process. Uniquely in British Columbia, rights to many films have been purchased for use in public post-secondary institutions through the Advance Education Media Acquisition Centre (AEMAC): Ph: (604) 323-5217, and are made available through the A/V librarian. Other films are available through HRDC Regional Office (Human Resources Development Canada), and should be able to be accessed though a local Human Resources Centre (previously called the Canada Employment Centre [CEC].)

While every effort has been made to provide contact information for A/V resources, Advanced Education Media Acquisitions Centre (AEMAC) has offered to research the sources of these resources and provide contact information for instructors inside or outside the province who have difficulty finding them. AEMAC: 100 West 49th Avenue, Vancouver, BC Canada, V5Y 2Z6. Ph: (604) 323-5217 Fax: (604) 323-5475.

Using Media Resources

If you are not already skilled at running film projectors and video-tape players, it is a good idea to get a lesson from the media technician at your college. It is an important part of role modelling for learners to see that you can competently handle technical equipment.

It is important to "debrief" after watching a film or video, to ensure that as much as possible is gained from the experience. This also enables the participants to question and clarify what it is they think they have seen. Leads such as, "Any initial questions or comments?" can bring out some general discussion; but if there are points you are trying to make with the A/V presentation, be sure to prepare some related questions, even if you must develop them while you are all watching the presentation together. (See "Class Discussions" in Teaching Strategies for further information.)

68

Related Programs and Publications

This guide does not stand alone— ***many existing publications can be used to support this program framework. Each unit has an extensive Resources section, to provide instructors with a variety of choices in focus for their program. Many of the federal publications are free, and some of the provincial publications are free inside the province. It is suggested that instructors order free publications relating to health and safety and career development when they are easily available.***

Related Publications

There are a number of publications identified as essential resources for an effective program. These have been chosen because they relate particularly well to issues for women in Trades, Technical and Operations (TTO) areas, or for their comprehensiveness relating to a particular discipline or across disciplines. It would be important to have these as resources for both instructor and learners. Some would be useful to be purchased as texts by learners.

The following is a list of **Essential Resources** for exploratory courses in trades and technology for women:

- Alberta Advanced Education and Career Development (AAECD.) *Job Search, The Product is You*. Workbook and Video. Revised 1996. Edmonton. Learning Resources Distribution Centre. Phone: (403) 427-5775, Fax: (403) 427-9750. ISBN 0-7732-0618-3. ($5.00/copy outside Alberta.)
- Berman, Sandy and Adrienne Montani. *Cross Cultural Lifeskills - A Manual for Facilitators*. Surrey, British Columbia: Surrey Delta Immigrant Services Society. Ph: (604) 597-3448 ext. 238. Revised 1993. (Approx. $20)
- Booth, Susan. *Bridges to Equity Participant's Workbook*. Toronto: City of Toronto, 1991. Department of the City Clerk, Resource and Publication Dept. 100 Queen Street West, Toronto Ontario M5H 2N2 Fax: (416) 392-7999 (Approx. $45)
- Bohnen, Elisabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual* Toronto: City of Toronto, 1991. Office of the City Clerk, Resource and Publications, 100 Queen St West, Toronto Ontario M5H 2N2 Fax: (416) 392-7999 (Approx. $55)

69

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- Braid, Kate. "*Building The Future - Profiles of Canadian Women in Trades; Looking Ahead - Profiles of Two Canadian Women in Trades*". Ottawa: Labour Canada, Women's Bureau, 1990. (819 994-0543) Catalogue # L016-1688/89B. (Free)
- Braundy, Marcia, managing ed. *Surviving and Thriving - Women in Trades & Technology and Employment Equity*. RR # 1, Winlaw, British Columbia: Kootenay WITT, 1989. Ph: (250) 226-7624 ($20)
- Ellis, David B. *Becoming a Master Student*. Boston: Houghton-Mifflin Company, 1994. (Approx. $37)
- Entry Level Trades Training: *TRAC Common Core Manuals*. Province of British Columbia Victoria, 1985-1989. Ph: 1-800-663-1653.
- *The Job Seeker's Handbook — Marketing Your Skills*. Province of British Columbia Ministry of Skills, Training and Labour Victoria, 1994. Available from OLA, Ph: 1-800-663-1653
- Province of British Columbia. *Outdoor Power Equipment and Motorcycle Service Technician Learning Guides*. Victoria. 1995. Available from OLA, Ph: 1-800-663-1653
- "*Personal Protective Equipment for Women: Addressing the Need*". Industrial Accident Prevention Association - 250 Yonge Street, Toronto, Ontario, 1991. Ph: (416) 506-8888
- O'Reilly, Elaine and Diane Alfred. *Making Career Sense of Labour Market Information and Facilitor's Guide*. Ottawa: Canadian Guidance and Counselling Foundation (CGCF). 1995. Ph: (613) 729-6164. Distributed in BC by the Open Learning Agency, Ph: 1-800-663-1653.
- Rexe, Deanna; Marcia Braundy et al. *Equity in Apprenticeship Resource Kit*. Victoria: Province of British Columbia, Ministry of Labour, Apprenticeship Branch, 1996. Distributed by the Open Learning Agency, Ph: 1-800-663-1653.($15)
- YWCA. Life Skills Division. *Discovering Life Skills With Women*. YWCA Metro Toronto, Ontario: 1976-1989. Vol. I - V. (Approx. $20 each)
- Zeiglar, Maggie, and Sandy Berman. Linda Coyle, Ed. *Personal and Life Management Skills for Women*. Vancouver: Kwantlen University College, Richmond, British Columbia. Revised 1996. Available from the Kwantlen bookstore.

Additional Related Publications

In addition to the instructional resources identified in this guide, there are a large number of publications that can be used to supplement an Orientation to Trades and Technology program. Many of these publications have been produced by the Centre for Curriculum, Transfer and Technology (formerly the Centre for Curriculum and Professional Development) for the British Columbia Ministry of Education, Skills and Training (formerly the Ministry of Skills, Training and Labour) and are available for purchase from the Open Learning Agency.

- Trades Curriculum

  There are many student learning guides available in areas such as professional cook, automotive service, professional driver, outdoor power equipment, horticulture, and electrical work. Those not familiar with particular learning guides are encouraged to contact the Centre for Curriculum, Transfer and Technology or visit the OLA Web site.

- Access Curriculum
  Resources in this category include *ABE Communications: Modules 1-6*, *Work Futures*, *Career Tech*, *Career Management Skills for Technical Students: Instructor Guide*, and *A Guide to the BC Economy and Labour Market Information*. If you would like information on these and other ABE and career preparation materials, please contact the Centre or visit the OLA Web site.

For information about publications contact:
Centre for Curriculum, Transfer and Technology
Fifth Floor, 1483 Douglas Street
Victoria, British Columbia
Canada V8W 3K4
Ph: (250) 413-4402 Fax: (250) 413-4403
World Wide Web: http://www.ctt.bc.ca

For pricing and ordering publications contact
Marketing Department - Open Learning Agency
4355 Mathissi Place
Burnaby, British Columbia
Canada V5G 4S8
Tel: 1-800-663-1653 or (604) 431-3381 Fax: (604) 431-3381
World Wide Web: http://www.ola.bc.ca/ola.lr

Part 3: Course Units

Personal and Professional Development Skills

Personal Growth and Development

UNITS

- Develop Self-Awareness to Improve Learning Potential
- Practise Self-Assessment
- Practise Building Self-Esteem
- Develop and Apply Problem-Solving Strategies
- Examine and Apply Guidelines for Goal Setting and Action Planning

KEY IDEAS

- Understanding learning methods and the inhibitors that individuals place in the way of their learning will enhance the ability to learn.
- Keeping a daily journal increases the capacity to absorb and synthesize learning experiences.
- Interests, values, skills, and personal qualities all determine the type of work to which the individual is most suited.
- Building self-esteem strengthens the ability to attain goals.
- Defining a problem is a major step towards solving it.
- Personal values and priorities should be explored in order to create a basis for defining and solving a problem.
- Problem solving and decision making are processes that can be learned and practised.
- Long-term goals are made up of a series of well-defined short-term goals and intermediate steps.

PURPOSE

In order to be ultimately successful in training and employment in trades and technology, women, in particular, must build a solid foundation. This topic provides the necessary grounding in self-development to enable learners to tackle the activities that follow.

REQUIREMENTS

This topic requires a commitment to active participation in individual class activities and regular attendance.

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Develop Self-Awareness to Improve Learning Potential

LEARNING OUTCOMES

Upon completion of this unit, learners should be able to devise strategies to increase their learning potential.

Note: Much of this material should be covered in the first two to three weeks of the program, to enable more effective learning of the less familiar technical material. It can be interspersed with generic tools exploration, math, and introductory technological literacy to maintain interest and focus. There are strong opportunities to develop critical thinking skills within this unit as learners examine and overcome personal and theoretical barriers to their learning process.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Explore test anxiety.	• Discuss test anxiety with class. Read "Let go of test anxiety," from the Test Chapter of *Becoming a Master Student.* In small groups, discuss the suggestions presented: Which of these would work for group members? Why? Why not? (See Handout #1: Exploring Test Anxiety in this unit.)
• Explore personal modes of learning.	• Read "Learning Styles: Background Notes for the Trainer" from *Bridges to Equity Program Manual.* Conduct group and/or individual discussions described in Handout #2: Background to the Learning Tool Process in the Resources section. Have learners complete Handout #3: A Learning Process Tool. • Ask learners to read, and discuss in small groups, "Learning Styles—Discovering how you learn" in the Diversity section of *Becoming a Master Student* and "Women's Relational Style of Learning" in the *Bridges to Equity Participant Workbook.* Which aspects of what was read applies to them? Ask learners to fill out the "how I learn" worksheet in that section. Encourage them to stop periodically during their classes to compare and contrast their experience with these readings. See also "Relational Learning Style Checklist" in *Bridges to Equity Participants Workbook.* • Encourage learners to complete "Exercise #4: The Discovery Wheel" and read "The Master Student" in the First Step Chapter of *Becoming a Master Student.* Write in essay or point form: What aspects of this self-evaluation surprised you? Complete journal questions at the end.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify behaviours and attitudes that can inhibit the learning process.	• Ask learners to read "Alcohol, tobacco, and drugs: The truth," and "Seeing the full scope of addiction" from the Health section of *Becoming a Master Student.* In class, have learners complete Exercise #29, Addiction, How do I know... • Make a mini-presentation based on the material in the Depression and Drug and Alcohol Use section of *Personal and Life Management Skills for Women.* Review material from *Native Students with Problems of Addiction* for potential use with learners. Provide learners with community resources that can be of assistance in any of these circumstances and encourage them to make use of them. • Using exercises from the Exploring Anger section of *Personal and Life Management Skills for Women,* conduct and debrief workshops related to how learners deal with Anger, and what their concerns and ideas are about expressing it. Highlight the "Rescue Triangle" from the Feelings and Relationships section and identify roles participants have played in that. Experiment with playing different roles in the scenarios provided. Develop scenarios from Trades, Technology and Operations (TTO) workplace situations. • Read Understanding Racism in *Personal and Life Management Skills for Discovering Life Skills With Women, Vol. IV.* Using examples provided by the group, analyse what makes a situation or comment racist. What might be an effective response? Why?
• Apply conflict resolution model to an unresolved conflict.	• Read the "Communications Loop" and "The Fine Art of Conflict Resolution" from *Becoming a Master Student.* • Ask learners to outline the elements of verbal and non-verbal messages, and highlight how these might be miscommunicated with people from a variety of cultures. Conduct a role play where some of the needed elements are left out, or misunderstood and analyse the result. (See exercises 67 and 68 in *Personal and Life Management Skills for Women.*) Use the "Listening Effectively" exercise from Section I, *Cross- Cultural Lifeskills,* also exercises in Section V, Cross- Cultural Conflict Resolution to identify personal styles and responses to conflict. • Review conflict resolution steps from *Cross-Cultural Lifeskills,* and practise using them in a large group, then in groups of three (see conflict resolution exercise # 6).

Specific Learning Objectives	Teaching/Assessment Strategies
• Describe methods for overcoming behaviours and attitudes that inhibit learning.	• As a class, brainstorm list of behaviours and attitudes that can inhibit the learning process. Divide the brainstormed list into sections. • Form small groups to formulate and evaluate methods for dealing with the behaviours, thoughts and feelings. Share and debrief as a class. • Use *Discovering Life Skills With Women*, Vol. IV, pg. 8 for exercise on "reframing."
• Analyse experiences, information and feelings related to the learning process.	• Have learners use their journals and emphasize to them that: what they are doing is a process; there will be a great deal of information and experience to track; and learning occurs from analysing experiences. • Express your willingness to review the journals once a week to get a sense of the learners' progress and to provide individual feedback. (See Teaching Strategies in Part II and *Becoming a Master Student* for more information on journals, and Resources for several approaches to introducing journals to your learners.)
• Devise strategies to increase learning potential.	• Ask each learner to develop an action plan for positive behavioural changes that will increase their learning potential.

RESOURCES

Books

- *Anger in the Classroom.* Order from Detselig Enterprises Ltd./Temeron Books Inc.
  210 - 1220 Kensington Road North West,
  Calgary, Alberta T2N 3P5 Ph: (403) 283-0900
  Fax: 283-6947 ISBN 1-55059-080-4

  A resource that makes people aware of and responsible for their own anger. Written by BC authors, the book promotes useful strategies and activities to develop anger management skills.

- *Managing Anger.* Concordia College—Career Development Division 1992. 9359 - 67A Street, Edmonton, Alberta T6B 1R7
  Ph: (403) 466-6633 Fax: (403) 466-9394

  A program consisting of seven sessions.

- Berman, Sandy and Adrienne Montani. *Cross-Cultural Lifeskills—A Manual for Facilitators.* Surrey, British Columbia: Surrey Delta Immigrant Services Society.
  Ph: (604) 597-3448 ext. 238. Revised 1993.

  While describing why and how to modify existing material to accommodate a cross-cultural environment, this book provides a wide variety of exercises developed for this publication and/or selected from other writings on the subject. Areas covered include: adapting existing life skills curriculum, assertiveness training, cross-cultural awareness, dealing with racism, the Canadian system and culture, and cross-cultural conflict resolution. Extensively uses exercises from *Discovering Life Skills with Women* and *The WHITE AWARENESS Handbook for Anti-Racism Training.*

- Booth, Susan. *Bridges to Equity Participant's Workbook.* Toronto: City of Toronto, 1991. Department of the City Clerk, Resource and Publication Dept. 100 Queen Street West, Toronto M5H 2N2 Fax: (416) 392-7999

  Filled with practical exercises to use with self-assessment, shop training, learning styles exploration, overcoming workplace barriers, and career decision making.

- Chappell, Monika. *Relief...At What Cost? — Women with Disabilities and Substance use/misuses: Tobacco, alcohol and other drugs.* Summary of Themes March 1996. DAWN Canada: Disabled Women's Network Canada. Suite 408 - 3673 Cambie Street, Vancouver, British Columbia V5Z 2X3
  Ph/Fax: (604) 873-1564.

- Devine, James, and David Kylen. *How To Beat Test Anxiety.* Woodbury, New York: Barron's Educational Series.

  This is one of their well-written "How To" books. It includes self-scoring surveys with lots of suggestions for improving the situation.

- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994.

  This excellent self-help study book provides useful resources, ideas, exercises, and information on a wide variety of issues encountered when entering or re-entering educational studies. Areas of focus include study skills, time and financial management, diversity and harassment issues, health, communications and relationship issues. Presented in very practical terms, it supplies many interesting critical-thinking exercises and can be used individually or with groups. There is solid information about learning styles, and exercises targeted at differing learning styles at the end of each chapter.

- Goodman, Marilyn Shear, and Beth Creager Fallon. *Pattern Changing for Abused Women: An Educational Program/Book and Supplement (Interpersonal Violence: The Practice, Vol. 9),* Sage Publications. 1995.
  ISBN: 0803954948

- Grassick, Patrick. *Making the Grade.* Agincourt, Ontario: Macmillan Publishing, 1983.

  This book has an excellent chapter on the subject of test anxiety.

RESOURCES CONT.

- Hale, Janet Campbell. *Native Students with Problems of Addictions.* Native Adult Education Resource Centre, Okanagan College and the Province of British Columbia: 1990. Distributed by the Open Learning Agency.
  Ph: 1-800-663-1653.

  An excellent and comprehensive manual for adult educators containing information on addictions; identification, prevention, and intervention activities with very useful handouts; a good contacts list, and resources. Soon to be out of print, check your college libraries.

- Hutchinson, Nancy L. and John G. Freeman. *Pathways—Anger Management on the Job.* Scarborough, Ontario: Nelson Canada. 1996.
- YWCA. Life Skills Division. *Discovering Life Skills with Women.* YWCA Metro Toronto, Ontario: 1976-1989. Vol. I - V.
- Zeiglar, Maggie, and Sandy Berman. Linda Coyle, Ed. *Personal and Life Management Skills for Women.* Vancouver: Kwantlen University College, Richmond, British Columbia. Revised 1996.

  This revised edition is rich with exercises on drug and alcohol issues, depression, anger, self-esteem, values, stress management, and assertiveness training.

Films and Videos

Weinstein, Sandy and Cathy Hurwitz. Workplace Skills Series. Produced and directed by Cathy Hurwitz; Richard Ball. Oakville, Ont.: Coronet/MTI Film and Video. 1992. Distributed by Magic Lantern. (West) 1-800-263-1818;
(East) 1-800-263-1717. Distributed in BC by Advanced Education Media Acquisition Centre (AEMAC). Close captioned videorecording

- *Communicating Effectively.* VHS, 18 min.

  This program features practical insights regardless of job responsibilities or personality. It shows when and how to adjust one's communication style to new situations in the workplace, and it offers valuable tips on dealing with disagreeable co-workers.

- *Setting Goals.* VHS,13 min.

  Features insights into self-motivation and skills necessary to reach new levels of personal success. Reviews suggestions for developing both short- and long-term goals, understanding when to re-evaluate a goal, and building self-esteem.

- *Preparing for Employment.* VHS, 14 min.

  Brings clearly into focus the commonplace problems that often interfere with people's performance at work. Shows how with a few slight adjustments, every employee can learn to work more productively and with a greater sense of satisfaction.

- *Thinking Creatively.* VHS, 13 min.

  This program features important insights on brainstorming, creative decision making, and the best way to translate good ideas into workable actions. It also discusses the pros and cons of group decision making, rewarding creativity, and the value of good communication skills.

Exploring Test Anxiety

Where does test anxiety come from

1. pressure from others—peers, family, teachers
2. pressure from oneself—as a result of self-concept
3. concerns about the future—work, security, etc.
4. lack of preparation or lack of knowledge

How does it manifest itself?

Test anxiety, like other kinds of anxiety, appears primarily as the physical symptoms of stress: tightness in chest, fear and panic response, trouble sleeping or studying, and blanking out.

How can you handle it?

The symptoms can be treated and alleviated using traditional stress-reduction techniques (see the Stress Management unit) and some specific study and test-related activities, such as:

1. Understand that everybody is nervous before a test. Often this can motivate us to study more thoroughly, which can lead to greater competence and success.
2. Become aware of "negative self-talk." It can sabotage the learning experience.
3. If stress gets in the way of studying, practise deep breathing exercises and relaxation techniques to calm oneself, and positive self-suggestions: "I have this under control."; "I can learn what I need to know."; or "I will do well on my exams today."
4. Don't talk with other learners immediately before exams. Reinforce what you do know, not what you have missed.
5. Concentrate on the tasks at hand, whether it is studying or an exam. Tell yourself you can worry later, if you must.
6. When you sit down to the test, take a few moments to plan how you are going to use your time. Which sections will you do first? How much time will you allow for each section? Do the questions that you know well first, and go back to the others later. Success breeds success.
7. If you are unsure of an answer, picture yourself away from the exam, at home or in the library, studying. Picture the book and the answer.
8. Breathe deeply and try to relax.

Handout 2

Background to a Learning Process Tool

Read the Learning Process Tool Handout in this unit. This tool was developed by Carol Brooks, Ph.D., for use with Women in Trades and Technology courses in Ontario. It is used to assist women to identify their learning styles and therefore increase their ability to learn more effectively, and to eliminate those parts of their learning style that hinder their development.

The tool has been used and modified to suit a number of different Women in Trades and Technology instructors. Although some suggestions are presented here for the use of this tool, instructors are free to modify and use the tool in any way they think would be useful.

After the learners have completed the written analysis, it is worthwhile to hold both individual and group discussions. The individual discussions could be taped with the learner's consent and a copy provided to them. This would enable learners to evaluate their own progress as time goes on. Questions for discussion could include: How would you describe your learning process? Did you take things very personally? (Is there a need to develop some distancing techniques?) Did you try to take in too much? (Is there a need to be more selective?) You could give learners the example of a circle divided into three parts: assessing and planning, thinking, and doing. Some people start with one area, others with a different area. Where do you start?

In the discussion process, many learners may be able to identify and examine their own blocks to learning. They may also be able to begin to develop their own solutions. After all, individuals learn better as they understand their own learning process and observe others. Stress that this is not a test—it is a useful exercise in observation.

Introducing Journals[13]

One of my opening conversations with class members on the first day of each Women in Trades and Technology class has to do with expectations—theirs, and mine....and when I introduce the journal, I tell them:

- I want each of you to come to school tomorrow with a spiral notebook. (Not a looseleaf binder—I don't want to haul 16 of them home each weekend.)
- You'll use it for your journal [many groans], which I'd like you to keep separate from the notes you take during class time.

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[13] Caitlain Macart. Splinter Group and Malaspina University-College, B.C

- How many of you have ever kept a journal before? What was that experience like?
- I'm assigning this, but I feel confident you'll understand its usefulness and get into doing it before long.
- Remember: this is not about grades. I'm not grading your work. I won't make any corrections (unless you ask me to) except for the spelling of people's names or of other resources you've written down.
- These weeks will fly by for us—and when the time is over, I want you to have your journal, because we'll have covered an enormous amount of plain and simple information—and there's no way you can possibly retain it all, so you'll have lost a valuable resource.
- More importantly, however, you are engaging in a process now. In the next weeks, you'll experience many changes relating to your self-concept, your attitudes about those around you, and your potential for paid work. I want you to document those changes—the process. Your journal will be like a photograph—no, more like a movie—of it, so that when this class is over you'll be able to see the ways you were able to clarify your thoughts, integrate your understandings, and see yourself engaged in a decision-making process. And then you'll have a tool for after the class is over.
- I'm not concerned with your spelling or your grammar, although you should work on those as you are able.
- I am concerned with your honesty, so please, no garbage. Just write: what you did today, how you feel about it, what you think about it, your ideas and wishes, your grocery list, leads to follow, what you're juggling separate from our class, how your kids are doing—draw if you like.
- Date each entry, and write every day.
- I'll collect your journals every Friday. I'll read them and I'll comment to you in them. So, you can write to me if you want, or to your Aunt Sally or to "Dear Diary"—whatever you like. Just write. Start tonight. Tell me how today felt.
- You'll find that each of you, individually, will be involved in a special kind of dialogue with me and that I'll know you better, and so be able to give you more information, support, direction than I might otherwise be able to in eight short weeks.
- This all takes trust, I know—but we don't have much time, so try me. Your journals are confidential.

A Learning Process Tool

1. How do you usually learn best? (Check one).

- ☐ From working on my own and taking my own time
- ☐ From an instructor's lecture
- ☐ From an instructor who works individually with me
- ☐ From working in a small group of people I feel comfortable with
- ☐ From seeing practical applications
- ☐ From following written directions
- ☐ From a small group of people with an instructor available to answer questions
- ☐ Other (specify) ______________________________

2. If you have barriers to overcome that affect your learning, what are they? Check as many as you want.

- ☐ Financial
- ☐ Study skills not good
- ☐ Not really interested in doing this, but felt I had no choice
- ☐ Family and/or friends not supportive of my decision to go back to school
- ☐ Lack of energy
- ☐ Daycare
- ☐ Lack of self-confidence
- ☐ No one to talk to about my decision to go back to school
- ☐ Physical and health problems
- ☐ Fears and anxiety
- ☐ Other (specify) ______________________________

3. What kinds of skills do you need to learn or relearn to help you with your courses? Check as many as you want.

- ☐ How to read better
- ☐ How to study
- ☐ How to plan time for studying
- ☐ How to pay attention for longer periods of time
- ☐ How to relax
- ☐ How to solve problems
- ☐ How to concentrate
- ☐ How to value myself
- ☐ How to express myself in speaking
- ☐ How to evaluate myself
- ☐ How to stay aware that I belong in the program
- ☐ How to follow someone else's directions
- ☐ How to make the course fun for myself
- ☐ How to express myself more effectively in writing
- ☐ Other (specify) ______________________________

4. What helps your learning the most? Check as many as you want and rank in order of importance (1 being the most important item).
   - ☐ Having my own routine
   - ☐ Talking with others while learning
   - ☐ Being able to take my time
   - ☐ Getting support and encouragement from instructors and/or people at home
   - ☐ Having fun while learning
   - ☐ Being able to practise what I am learning
   - ☐ Having someone push me
   - ☐ Other (specify) ____________________

5. Think of three things you have enjoyed learning; they can be anything and don't have to be related to school. What are they and why did you enjoy them?

   1. ____
   2. ____
   3. ____

6. What occurs to you first when you learn something? Check one.
   - ☐ Remembering something I did once that was similar
   - ☐ Thinking up a picture of how something ought to be
   - ☐ Getting as much information as I can about what I am learning

7. What is the easiest part, or stage, of learning for you? Check one.
   - ☐ Beginning something
   - ☐ Completing something
   - ☐ Working on the details and practising
   - ☐ Other (specify) ____________________

8. What is the most difficult part, or stage, of learning for you? Check one.
   - ☐ Beginning something
   - ☐ Completing something
   - ☐ Working on the details and practising
   - ☐ Other (specify) ____________________

9. In putting something together, I... (Check one)
   - ☐ Read instructions first, then look at the pieces
   - ☐ Look at the pieces, then read the instructions
   - ☐ Go back and forth between instructions and putting pieces together
   - ☐ Look at the instructions but make up my own way of putting the pieces together
   - ☐ Try to put pieces together first, then if it doesn't work, look at the instructions
   - ☐ Other (specify) ____

10. What are you most aware of when you are in class? Check one.

☐ What I am working on
☐ How I am feeling that day
☐ What I don't understand
☐ How much I am learning
☐ What my children are doing
☐ What my assignment will look like when I finish
☐ What is going on in the room around me
☐ Other (specify) ____________________

11. When you have worked on something and still haven't quite got it, how do you feel? Check one.

☐ Restless
☐ Determined
☐ Stuck
☐ Patient
☐ Confused
☐ Challenged
☐ Impatient
☐ Depressed
☐ Other (specify) ____

12. In what order do the following skills come into your learning process? Rank them 1, 2, and 3.

☐ Thinking
☐ Doing
☐ Assessing, evaluating

13. How do you learn mechanical or technical things?

☐ Tinkering
☐ Having someone explain it to me
☐ Reading instructions
☐ Watching someone work, then doing it myself
☐ Other (specify) ____

14. How do you learn ideas and theories best? Check one.

☐ Talking about them
☐ Using them
☐ Reading about them
☐ Figuring out how they relate to me and my life

Other (specify) ____

15. When is it important to you to be able to talk about what you are doing? ______________

16. How do you know when you have learned something thoroughly? Check one.

☐ Feel comfortable when I do it again
☐ Show or tell my family and friends what I can do
☐ I want to move on to learn something new
☐ Other (specify) ____

Practise Self-Assessment

LEARNING OUTCOME

Upon completion of this unit, learners should be able to assess how personal strengths and determination of career direction can lead to personal occupational satisfaction.
Note: The latter part of this unit should be completed after exploring the unit on Labour Market Trends.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify interests, work preferences, skills, and personal qualities that can be analysed to provide vocational direction.	• Have learners complete a general interest inventory such as those found in Section 2 of *Self-Directed Career Planning Guide*, and compare the results with the "Profiles of People" in various occupations found in Chapter 3. See also "How Do You Identify At Least Two Different Jobs You'd Love?" from *What Colour is Your Parachute?*
	• Complete the *Bridges to Equity Program Manual* General Knowledge Inventory Questionnaire on TTO Work, and the Electro-Mechanical Comprehension Assessment, which are good indicators of where learning development is needed. This can be done individually at the beginning and end of the course, or put on to tranparencies and completed as a class exercise to make it into less of a test situation.
• Analyse the role of culture in occupational choice.	• Using Handout # 1: Culture, Gender, and Diversity, ask learners to, on separate 3 x 5 cards, describe themselves within the cultural contexts outlined. Then have them add gender factors to each card. Discuss the impact this might have on their occupational choices and pursuits.
	• In small groups, ask learners to discuss their cultural differences using, as organizers: conflict resolution, economic organization and standard of living, families and kinship systems; arts, play and recreation; rewards and punishment; education; housing and transportation; and religion.
• Explain the concept of transferable skills.	• Review material and have learners complete transferable skills exercises in Chapter 9 of *What Colour is Your Parachute*, in Section 2 of the *Self-Directed Career Planning Guide, The Beginning Quick Job-Hunting Map* and/or in the Getting Ready Section of the *Job Seeker's Handbook*.

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Specific Learning Objectives	Teaching/Assessment Strategies
	• Have learners complete the *Bridges to Equity Participant's Workbook* "Personal Strengths List" in Unit 1. In small groups, learners outline several working experiences they have had (paid or unpaid, community activities, roles, etc.) and the ways in which they used their personal strengths. From these, identify the things they: do well, do poorly, don't like doing, want to do better, etc.
	• Describe (for example) how the components of the craft of sewing (patternmaking, measuring, cutting, fitting, and fastening) can be applied to the development of skills in many trades and technology areas (e.g., construction, metal fabrication, and civil and structural engineering).
	• Review the Skills Transferability section of *Bridges to Equity Participant's Workbook.*
• Describe at least three potential vocational directions.	• Complete a vocational interest inventory (see Resources). A school vocational counsellor can assist in interpreting the information.
	• Analyse the information gathered from the previous activities (including an examination of labour market trends, self-assessment, and occupational research) and identify suggested categories of occupations. In small groups, analyse and discuss the suitability of a variety of options. See Chapter 10, "How Do You Identify At Least Two Different Jobs You'd Love" from *What Colour Is Your Parachute?* and Sections 1-3 in the *Self-Directed Career Planning Guide.*

RESOURCES

Testing

Some difficulties with interest inventory testing are created by the standards used in designing the tests. Traditionally, in fields that were predominantly male, only men would be interviewed to determine the interest profile for that group. Females would then be evaluated on the basis of the male profile for that field.

Several companies have responded to this concern by developing a profile based on interviews with women in the particular fields. Although the sample may be small, the discovery is that the profile for females is considerably different than the profile for males.

Included here are some of the tests that have taken these issues into consideration:

- Bilious, Richard N. and Zenoff, Victoria B. *The Beginning Quick Job Hunting Map*. Berkeley, California: Ten Speed Press, P.O. Box 7123, Berkeley, California, 94707.

  This work booklet provides several opportunities to outline transferable skills by describing all of the very specific activities that go into a larger project, in terms of personal attributes, identifiable skills, and competencies.

- *Career Assessment Inventory Profile*. Multi Health Systems, 10 Parfield Drive, Willowdale, Ontario: M2J 1B9. Ph: (416) 498-1200.

  Highly recommended, especially for use with those considering two-year programs, as it distinguishes well between trades and technologies. The obstacle is the cost, as it must be sent away to be marked and interpreted. Even with this factor, it is highly recommended because the quality of analysis and suggested occupations is much more useful than any of the self-marked versions. It was developed from the beginning with female as well as male profiles.

- *Strong Campbell Interest Inventory*. PSI Can Consulting Ltd. Box 170, Rm. 103, Learner Union Building, University of Alberta, Edmonton, Alberta: T6G 2J7. Ph: (403) 433-6467. Also, Psychometrics Canada: 1-800-661-5158.

  This test is by far the best of all the inventories for use in considering four-year programs. It has all the benefits and drawbacks of the Career Assessment Inventory Profile mentioned above. It has different male/female sample profiles.

- *COPS—California Occupational Preference System*. EDITS: San Diego, California: 92107.

  This 30-minute, self-scoring inventory has a Canadian version and distinguishes between trade areas.

- *Jackson Vocational Interest Survey*. London, Ontario: Research Psychologists Press, Inc., P.O. Box 3292, Station A, N6A 4K3.

  This group takes into consideration gender samples and is quite valuable.

- *Myers-Briggs Type Indicator*. Canadian distributor: Psychometrics Canada Ltd. Ph: 1-800-661-5158. web site: www.psychometics.com

  Short, non-invasive self-testing questionnaire used to measure and describe people's preferences for how they like to get information, make decisions, and orient their lives. Very useful for thinking about life and work styles.

Books/Simulation Games

- *BaFa' BaFa'—A Cross-Cultural Simulation*. Simulation Training Systems, 11760-J Sorrento Valley Road, San Diego, California 92121 Ph: (619) 755-0272 Fax: 749-2089.

  Simulation activities that place students in "foreign" cultures. Highly recommended at the Senior Secondary level. Good potential with post-secondary learners.

- *Barnga*. Maine: Intercultural Press. Ph: 1-800-370-2665. Cross-cultural awareness game.

- Bohnen, Elizabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual and Participant's Workbook*. Toronto: City of Toronto. 1991. Fax: (416) 392-7999 (see "Develop Self-Awareness" for review)

RESOURCES CONT.

- Bolles, Richard Nelson. *What Colour Is Your Parachute? A Practical Manual for Job-Hunters and Career Changers.* Berkeley, California: 10 Speed Press, 1997.

  A practical manual for Job-Hunters and Career-Changes that provides many thought-provoking exercises that can help to clarify desires, attributes, skills, and direction.

- *A Career Planning Workbook for Women.* Toronto: Times Change and Ontario Women's Directorate (OWD). 1994.
  ISBN 0-7778-2290-3 0-7778-2289-X.

- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994.

  See "Develop Self-Awareness" Unit for details.

- Hale, Janet Campbell. *Native Students with Problems of Addictions.* Native Adult Education Resource Centre, Okanagan College and the Province of British Columbia, 1990. Distributed by the Open Learning Agency. Ph: 1-800-663-1653

  See particularly: "Student Handout 12: A model for understanding group identity and behaviour patterns." Soon to be out of print, please check your college library.

- *The Job Seeker's Handbook — Marketing Your Skills.* Province of British Columbia Ministry of Skills, Training and Labour. Victoria, 1994.

  A BC version of the Alberta Job Seekers series, including *The Job Seeker's Handbook: Marketing Your Skills* and *The Job-Loss Workbook: Creating a New Future,* is available from the Open Learning Agency. Ph: 1-800-663-1653. In Alberta it is available through Learning Resources Distributing Centre, Ph: (403) 427-5775.

- McArthur-Blair, Joan. *Gender and Diversity—Creating Inclusion in the College Environment;* Province of British Columbia. 1995. Available from the Open Learning Agency: Ph: 1-800-663-1653.

  Thoughtful, clear, and with context statements, this unique set of curriculum materials handles many difficult subject areas with sensitivity and skill. It provides the background theory, outlines the materials needed for each suggested activity, and provides notes for the facilitator describing possible outcomes, cautions etc.

- McArthur-Blair, Joan. *Gender and Diversity—Creating Inclusion in the College Environment—Facilitator's Guide.* Province of British Columbia. 1997. Available from the Open Learning Agency: Ph: 1-800-663-1653.

  Section I provides rationales and time frames for specific exercises; suggested readings and facilitator's notes; Section II lists background resources; and section III provides a vast array of complete readings on gender and diversity issues; classroom issues, and heterosexism issues. An excellent and informative selection.

- Sawyer, Don, Brian Mathews, Kaui Keliipio, and Susan Couch. *Native Literacy and Life Skills Curriculum Guidelines—A Resource Book for Adult Basic Education.* Okanagan College and the Province of British Columbia. 1984, reprinted 1990.

  Divided into three parts: Understanding and Teaching Native Adults, Theme Units with sample activities, and Resources. Good life skills section, native culture, child care, personal strengths, and job interviewing. See section on "Native Culture." The Interpersonal Communications section is also particularly well done. Out of print, please check your local college library.

- "*Self-Directed Career Planning Guide*". Published by Information Development and Marketing Branch Alberta Advanced Education and Career Development. Revised 1994.
  ISBN 0-7732-0157-2. Available through Learning Resources Distributing Centre
  12360 - 142 Street, Edmonton, Alberta T5L 4X9
  #108333 - $6/copy outside Alberta.
  Ph: (403) 427-5775 Fax: (403) 422-9750.

  An excellent tool packed with facts, exercises, checklists, worksheets, case studies, tips, occupational/personality profiles, and strategies.

Culture, Gender, and Diversity:[14]

Culture:

Culture may be defined as learned behavioural patterns, expectations, attitudes, values, and infrastructures of any given group of individuals; their way of life. The concept of culture is broader than the concept of nationality. In every country there are separate cultural groups within the dominant culture. These cultural groups are based upon similarities in race, ethnicity, religion, region, gender, class, common interest or common work place, etc.

Gender:

We have described culture as a set of expectations and behaviours that are absorbed and learned. Gender behaviour is also largely culturally transmitted. We learn to be a "female" or a "male." These learned characteristics and psychological attributes are what we refer to as gender; the biological characteristics we are born with are referred to as sex. Researchers are still unclear as to which differences between men and women are biological and which are learned. To complicate the situation, male and female gender roles have changed rapidly in the past 25 years and continue to do so. It is important to remember that, because culturally transmitted behaviours are learned, they can be changed. (Brilhart, John K. and Galanes, Gloria J., 1992).

Diversity:

Diversity refers to any group that is culturally heterogeneous. Diversity by definition implies difference and, although as individual human beings are diverse, the term generally refers to differences between culturally defined groups.

As previously discussed, culture is a set of learned constructs based upon the influences, values, and activities of a group or subgroup. Each individual can define for themselves the ideal culture, however, when a group of individuals come together a dominant culture is formed that may include none, part or all of an individual's culture. When very little from an individual's culture is included in the dominant culture, it fosters exclusion. Culture is formed based upon the relationship between values, activities, and infrastructures within a group. As a dominant culture forms, it assimilates, adapts, and accommodates for the strongest, most vocal or largest group. Non-dominant members of a culture work and learn in an environment that does not belong to them.

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[14] This material is reprinted from Joan McArthur-Blair's *Gender and Diversity—Creating Inclusion in the College Environment*. Province of British Columbia, 1995, and may be copied only for classroom use.

Practise Building Self-Esteem

LEARNING OUTCOME

Upon completion of this unit, learners should be able to recognize, receive, and present positive statements about themselves.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify personal feelings about self.	• Use *Discovering Life Skills with Women*. Vol.II, exercise no. 1, p.35 on Building Self-Esteem. • Use *Self-Assertion for Women*, What Are You Telling Yourself?: pp. 58-75.
• Determine how self-esteem affects daily lives.	• Distribute the Handout #1: Self-Esteem in this unit; discuss and analyse the validity of the statements on self-esteem.
• Describe effects of low self-esteem and effects of high self-esteem from your own life experience.	• In small groups, explore the impact of self-esteem on each individual's life. In particular, focus on the second quote on the Self-Esteem handout. Discuss individual strategies that might be used to increase self-esteem.
• Explore cross-cultural awareness.	• Ask learners to write down the answers to Handout #2: Cultural Awareness Questionnaire and Stereotype Influences. In small groups share the answers and discuss any new insights. What impact might one's cultural background have on one's self-esteem? On the esteem we may have for others? What impact might it have in the workplace? [See also exercises on Biases, Assumptions and Stereotyping in *Personal and Life Management Skills for Discovering Life Skills With Women*, Vol II.]
• Develop an understanding of the potential impact of affirmations.	• Read "Attitudes, affirmations and visualizations" from the What next? section of *Becoming a Master Student*. Using exercises 16, 17, and 18 from the Self-Esteem section of *Personal and Life Management Skills for Women*, share a definition of affirmations, and invite participants to frame and practise useful affirmations for themselves. A guided visualization like that found in exercise 15 might be a good lead-in to this. Some individuals from some cultures may find this difficult. Discussion of reactions and resistance would be valuable. This activity should always be optional.

Specific Learning Objectives	Teaching/Assessment Strategies
Identify ten personal strengths.	Brainstorm a long list of qualities the small group admires in people in general. Individual learners then highlight at least ten of these that they already possess or are developing. Share the lists and have group members add positive suggestions to it. See also "Claiming My Skills, Strengths and Accomplishments" in the *Bridges to Equity Participants Workbook*.
Determine and explore the barriers to describing oneself to peers using only positive terms.	Using the Trainer's Notes for Learning to Evaluate Positively in *Bridges to Equity*, conduct a discussion about "bragging," and its potential use in TTO work environments. (See also *Discovering Life Skills With Women*. Vol. II, exercise 2, p.36 & exercises on p. 40-44 on building self-esteem.)
	Compare and contrast how different individuals from different cultural backgrounds view "bragging" and discuss what impact this might have in the workplace. Some exercises in the Cross-Cultural Awareness section of *Cross-Cultural Lifeskills* may be useful here.
Practise esteeming oneself and others.	Ask individual learners to make three-minute speeches to the class, describing themselves or something they have done, using only positive terms. As a class, describe and discuss any difficulties that were experienced.

RESOURCES

Books

- Berman, Sandy and Adrienne Montani. *Cross Cultural Lifeskills—A Manual for Facilitators.* Surrey Delta Immigrant Services Society. Ph: (604) 597-3448 ext. 238. Revised 1993.

  This book adapts material from *Personal and Life Management Skills for Women,* and *Discovering Life Skills for Women* for a culturally mixed participant group, and draws from a number of cross-cultural and 'Dealing with Racism' resources. It also has several excellent exercises to assist immigrants to understand the Canadian System and culture.

- Butler, Pamela E. *Self-Assertion for Women.* Toronto: Fitzhenry & Whiteside Ltd., 1981. (See "Develop and Practise Assertive Skills for review.") (Out of print, check your library.)
- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994. (See "Develop Self-Awareness" for review.)
- Sanford, Linda Tschirhart, and Donovan, Mary Ellen. *Women and Self-Esteem.* Toronto: Penguin Books Canada Ltd. 1985.

  This publication analyzes and describes all aspects of women's experience from a feminist perspective and provides "blueprints for change" for each unit of exploration. There are questions and perspectives from which to view and overcome the issues from both personal and political points of view.

- Steinem, Gloria. *The Revolution Within.* New York: Simon and Schuster. 1992.
- YWCA. Life Skills Division. *Discovering Life Skills With Women* Volumes 1-5. YWCA Metro Toronto, Ontario: 1976-1989. CIP 0-9-19313-61-2.
- Zeiglar, Maggie, and Sandy Berman. Linda Coyle, Ed. *Personal and Life Management Skills for Women.* Vancouver: Kwantlen University College, Richmond, B.C. Bookstore Ph: (604) 599-2100. Revised 1997.

  This revised edition is rich with exercises on drug and alcohol issues, depression, anger, self-esteem, values, stress management, and assertiveness training.

Films and Videos

- *Tessa.* Lori Lansens, Director; producer, Milan Cheylov. Montreal: Bootleg Film/National Film Board. Ph: 1-800-267-7710. 1993.

  This film focuses on issues as they relate to teens: peer pressure, body image, young love, self-affirmation, parental restrictions and parental support, but many adults face the same issues. The discussion can be refocused as necessary. The film also deals with issues for children of colour, questions of cultural identity. The film asks teenagers the question: in spite of pressures both at home and at school, how do you go about finding out who you are and then liking what you find?

- Donahue, Phil. Gloria Steinem: *The Battle for Self-Esteem.* Princeton, N.J. : Films for the Humanities, c1994. (VHS).

  In this specially adapted Phil Donahue program, Steinem and her psychotherapist join other women in examining why women appear particularly vulnerable to feelings of incompleteness, self-doubt, and self-hatred, and how they battle to overcome these feelings and improve their sense of self-esteem.

Self-Esteem[15]

Self-esteem can be defined as the value we place on ourselves. The extent to which we value ourselves is a product of our past experiences, our successes and failures, and the support and recognition (or lack of it) that we receive in early childhood that influences how we feel about ourselves today.

Most often we love ourselves to the extent that we have been loved; and we are able to love others to the extent that we love ourselves.

Our sense of self-esteem is directly and intimately related to our ability to experience satisfaction in life. When our self-esteem is low, we may become depressed and passive, or angry and violent. As our self-esteem rises, so does our enthusiasm, creativity, energy and effectiveness.

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[15] Reprinted here with permission from *Discovering Life Skills with Women*

Cultural Awareness Questionnaire[16]

CULTURAL AWARENESS QUESTIONNAIRE I

1. Where were you born?
2. What language or dialect was/were spoken in your home?
3. Where did you grow up? Describe your neighbourhood.
4. Where did you attend school? Describe your classmates. Did you perceive your teachers to be similar or different from you and your family, and in what way?
5. Recall the first time you interacted with someone different from yourself. Describe this interaction.

Adapted from Jump Street Odyssey

CULTURAL AWARENESS QUESTIONNAIRE II

1. What is your cultural identity group?
2. What do you appreciate most about that cultural group?
3. If there was one thing you could change about your group, what would it be?
4. What are the assumptions that people make about your group that you feel are incorrect?
5. Describe your earliest experiences with someone different from you.
6. Identify one group with whom you feel most comfortable. Describe the aspects you appreciate most about that group.

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[16] Berman, Sandy and Montani, Adrienne. *Cross Cultural Lifeskills – A manual for Facilitators.* Used with Permission to copy for class room purposes

Stereotype Influences[17]

STEREOTYPE INFLUENCES QUESTIONNAIRE

1. Are there any "shoulds" that are relevant to your culture that might have an effect on your occupational choices?

2. How did you learn what a man or woman was supposed to want to be?

3. How satisfied or frustrated are you with the "shoulds" as they relate to your culture of origin?

4. What aspects of the male or female stereotypes would you want to keep or give up in:
   a) your culture of origin
   b) in the Canadian culture

5. What situations have you experienced where you have come into conflict with stereotyped notions? What happened and how did you deal with it?

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[17] Berman, Sandy and Montani, Adrienne. *Cross Cultural Lifeskills — A manual for Facilitators*. Used with Permission to copy for classroom purposes.

Develop and Apply Problem-Solving Strategies

LEARNING OUTCOME

Upon completion of this unit, learners should be able to describe the steps and strategies for resolving personal and career-related problems when examining case studies.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Outline how to identify and describe a problem.	• Brainstorm, introduce, and discuss the 5W-H system: Who, What, Where, When, Why, How. (See *Discovering Life Skills With Women*. Vol. 1, pp. 105-109, "Solving Problems With a System".) • Read and discuss "Steps to critical thinking," "Uncovering Assumptions" and "Solving Problems" from the Thinking section and "Find a bigger problem" from the resources section of *Becoming a Master Student*. What are the main points in each of the articles? In what way can they be used to assist in problem solving? Do any members of the group have experience with using a planned approach to problem solving? • Distribute Handout #1: Steps in Problem Solving and discuss step 2: "Defining the Problem." Encourage learners to separate the issues from the individuals involved, and try to find those areas where common interests come together. Small groups could develop sample scenarios that contain problems and outline how these problems can be solved using the handout.
• Analyse how personal values and priorities can influence problem-solving and decision-making activities.	• Have learners read "Values: Principles That Guide Our Path" from *Bridges to Equity Participant's Workbook*. Use *Personal and Life Management Skills for Women A Manual for Facilitators*, Vol.II — Stress, exercises # 47-49 on Identifying, Clarifying and Interpreting Values.
• Explore the decision-making process.	• Ask learners to read "How to fool yourself" and "Gaining skill at decision making" in *Becoming a Master Student*. • Facilitate exploration of "Problem Solving/Decision Making: A Tool" in Unit 6 of *Bridges to Equity Program Manual and Participant's Workbook*. Have learners complete the readings in this

Specific Learning Objectives	Teaching/Assessment Strategies
	section. Ask if anyone can describe a situation where "intuition" affected a decision they had to make. Conduct "the Problem-Solving Visualization".
	• See step 3: "Generating Ideas" and step 4 "Making a Decision" in the handout. Discuss in small groups: What is the best decision you have ever made? Why? What is the worst decision you have ever made? Why?
	• Ask learners to choose a decision they are currently considering. Have them go through to step 4, answering the questions listed. When they have a series of options to consider, ask them to narrow them down to two. When they wake the next morning, have them "plant" decision #1 in their mind, and act all day as if that will be their path. The following day, repeat, with the second option as the one which will be in effect. They should attempt to visualize their lives as if the decision had been made. Encourage them to compare the two experiences to assist in making hard decisions.
• Implement and evaluate your decision.	• See step 5: "Implementing The Decision" and step 6: "Evaluation" in the handout. Supply sample problems or ask learners to generate some examples of their own. Use *Discovering Life Skills With Women* Vol. III p.91/92 for strategies and sample problems. Apply the problem-solving strategies to these examples in small groups.
• Apply problem-solving strategies to case studies.	• Conduct individual and group analysis of the process. Which approaches worked most effectively? Where were difficulties encountered? What strategies were used to overcome the difficulties?

RESOURCES

Books

- Smith, Carrie. *Taking Action - A Guide to Successful Organizing and Advocacy in a Post-Secondary Environment for Students with Disabilities.* BC Educational Assoc. of Disabled Students/Province of BC. 1993.

  A "how to" in plain language.

- *Aids to Independent Living, Breaking Through the Barriers.* Ottawa: Government of Canada, 1994. Available through Minister of Supply and Services Canada or HRDC: Cat. # MP80-2/3-1995E ISBN: 0-662-22890. Also in audiocassette and braille. Enquiries Centre Fax: (819) 953-7260

  Helpful hints to make the home and workplace safer and daily tasks more achievable for those living with disabilities.

- *Help Yourself! Hints for Persons with Disabilities.* Ottawa: Human Resouces Development Canada, 1994. Available through Minister of Supply and Services Canada or Minister of Health and Welfare. Cat. # H21-95/1994E, ISBN: 0-662-22748-4. Enquiries Centre Fax: (819) 953-7260

  This informative booklet offers simple ideas and easy solutions to some of the day to day chores that challenge a person with disabilities.

- Several books from the Essential Resources list under Related Programs and Publications are also used in this unit: *Becoming a Master Student, Bridges to Equity Program Manual and Participants Workbook, Discovering Life Skills with Women* and *Personal and Life Management Skills for Women - A Manual for Facilitators.*

Steps in Problem Solving[18]

Step 1. Recognizing a Problem

When things are not up to our expectations or we have an uncomfortable emotional reaction, we become aware that there is a problem.

Step 2. Defining the Problem: Use the 5W-H system: Who? What? Where? When? Why? How?

- Identify the levels of the problem.
- Is it superficial or is it deep?
- Is it a crisis?
- Restate the problem in positive terms: What is the challenge for me in this situation?

Step 3. Generating Ideas

- Brainstorm ideas, aiming for quantity and creativity.
- Combine the ideas into new possibilities.

Step 4. Making a Decision

- Examine the consequences of each idea.
- List your priorities: What are the important factors?
- List these factors in order of importance.
- Choose the solution that meets the necessary criteria.

Step 5. Implementing the Decision

- Design a plan for implementation.
- Find a way to evaluate the degree of success.
- Anticipate problems.
- Rehearse and then try it out.

Step 6. Evaluation

- Assess what happened in detail.
- Was it a success or a failure?
- If it failed, identify the difficulties encountered at each step and rework this problem-solving system using the new information.

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[18] Adapted from *Discovering Life Skills For Women*, Vol. III

Examine and Apply Guidelines for Goal Setting and Action Planning

LEARNING OUTCOME

Upon completing this unit, learners should be able to develop a personal action plan that includes at least one long-term goal.

Specific Learning Objectives	Teaching/Assessment Strategies
• Explain why goals are necessary.	• Form small groups to discuss the statement, "If you don't know where you are going, you will probably end up somewhere else." Using a role play, present group findings to the whole class. See also "How to Get There: Stepping Stones Down Different Paths" from *Career and Personal Planning* Curriculum.
• Identify at least five aspects to be considered in setting a goal.	• Read and conduct exercises from Goal Setting I and II in *Discovering Life Skills with Women.* Vol.II. Use the Handout: Considerations for Goal Setting following the Resources section to outline goals in one aspect of life.
• Analyse successes and mistakes in previous goal setting and action planning.	• Familiarize yourself with the Trainer's Notes on Reality of Women's Life/Career Cycle in Unit 1 of *Bridges to Equity Program Manual*, and conduct the Life Cycle and Life Line exercises.
• Outline individual life goals and analyse their potential.	• Individually, learners list their goals and place a check next to those they think are reasonable in the light of what they have learned and what they want to see come true.
	• Have learners brainstorm criteria for determining their potential (e.g., Is it financially possible? Am I physically able? What kind of upgrading would I need?)
	• In small groups, discuss how to overcome internal (e.g., "I'm not capable...") and external (e.g., My family disapproves.") barriers to these goals. Record on a flip chart. Share in the large group. Save for review.
• Outline individual steps required to achieve these goals.	• See Goal Setting II exercises in *Discovering Life Skills with Women*, Vol.II. Use the methods and steps developed there to outline steps toward goals.
• Develop a personal action plan with at least one long-term, achievable goal.	• Refer to Handout: Considerations for Goal Setting to develop a personal action plan.
• Evaluate and set timeframe (short term or long term).	• Test, evaluate, and rethink if necessary.

RESOURCES

Books

- Bohnen, Elizabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual.* Toronto: City of Toronto. 1991. (Office of the City Clerk, Resource and Publications, 100 Queen St West, To. Ontario M5H 2N2 Fax: (416) 392-7999)

  This highly developed and extensive set of materials assists in moving women from clerical into technical occupations within a company. It is filled with readings, resources, exercises, advice, descriptions, activities, all meant to prepare women for success in making the transition into TTO occupations. It is an essential resource.

- BC Ministry of Education, Skills and Training. *Career and Personal Planning 8-12: A Resource for Schools.* Victoria, British Columbia: 1995. Open Learning Agency. Ph: 1-800 663-1653.

  Excellent exercises in the Planning Process and Career Development activities for Grades 10-12 often are useful with an adult group.

- Campbell, David. *If You Don't Know Where You're Going, You'll Probably End Up Somewhere Else.* Niles, Illinois: Argus Communications. Revised 1990. Tabor Publications. ISBN 1 55924-373-2.

  This book is about making opportunities for yourself. A well-told story with action-oriented suggestions. Interesting, innovative, and easy to read.

- YWCA Life Skills Division. *Discovering Life Skills with Women.* Vol. II. Toronto, Ontario: YWCA Metro Toronto, 1976-1986. Ph: (416) 487-7151.

Films and Videos

- Hurtz, Cathy, Producer. Workplace Skills series: *Communicating effectively, Preparing for employment, Setting goals, Thinking creatively.* VHS 13-17 min. Coronet/MTI Film and Video. MAG 1992.

Considerations for Goal Setting[19]

When you are planning and setting goals, you should consider these factors:

1. The time period: How long do I have or need to have to achieve the goal?
2. How can I make my goal more specific?
3. How realistic is my goal in terms of my abilities? Is it possible for anyone to attain it?
4. What qualities or skills do I have now that will help me achieve my goal?
5. What internal or personal barriers are standing in my way (e.g., aptitudes, abilities, attitudes, prejudices)? What external barriers need to be overcome (e.g., racial or sexual discrimination, financial constraints, educational opportunities, job market, family responsibilities)?
6. How might I hinder myself? How might I help myself?
7. How might my goal be hindered by others (intentionally or unintentionally)? How might it be helped?
8. What questions or skills do I need to acquire to help me achieve my goals?

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[19] Adapted from *Life Options Workbook* Women's Secretariat, Saskatchewan Ministry of Labour, 1980. Used with permission.

Women and Work

UNITS

- Explore Women's Roles in Society
- Explore the Position of Women in the Labour Force
- Recognize, Adapt and Influence Workplace Culture
- Deal Effectively with Harassment

KEY IDEAS

- Debunking myths about gender-role stereotyping helps us eliminate internal barriers to occupational choices.
- Analysing women's historical and current position in the labour force broadens our awareness of career options.
- Analysing and understanding internal and external barriers to successful training and employment provides a basis for overcoming them.
- Investigating the success that other women have achieved provides role models for our own potential success.
- Developing strategies for responding to barriers assists in developing competent, assertive actions in the future.
- Although gender, racial, and sexual harassment may be different in action, the overall effect is the same for all: discomfort and undermining of performance.
- There are effective legal and personal strategies for dealing with harassment and discrimination.
- It is important to know the steps and levels of approach for dealing with harassment and discrimination.

PURPOSE

It is essential to understand where one has been in order to modify where one is going. The socialization process has had a significant impact on women's and men's perceptions about appropriate work for either gender. Investigating the effects of that socialization on individuals, and on the position of women in the workforce in general, enables learners to develop successful personal strategies for overcoming barriers they may encounter. By assisting learners to identify and generate solutions for dealing with potential barriers, we provide them with another set of tools that perhaps may be necessary in completing their goals. Note: This topic should be done concurrently with the unit on Develop and Practise Assertive Skills.

REQUIREMENTS

This topic requires the ability and willingness to explore a broad range of issues relating to women and work.

Explore Women's Roles in Society

LEARNING OUTCOME

Upon completion of this unit, learners should be able to identify how gender-role stereotyping may limit their occupational choice

Specific Learning Objectives

- Explore societal assumptions about a woman's roles.
- Demonstrate awareness of how past messages of female gender-role stereotyping can affect current behaviours.
- Describe gender-role values as affected by cultural background.

Teaching/Assessment Strategies

- Distribute Handout 1: Working It Out - An Introduction and read it as a class. Ask the class to describe how the situation of women differs today. What has their experience been? Discuss potential differences for women from a variety of cultures, either from experience or from research conducted by learners. See Values Inventory and Values Clarification exercises in Cross Cultural Awareness section of *Cross-Cultural Lifeskills - A Manual for Facilitators.*
- Ask participants to fill out the Stereotype Influences Sentence Completions in the Stress section of *Personal and Life Management Skills for Women* and break into groups of two to share their responses. Use the Discussion Questions in that section to analyse the impact of socialization.
- Read and review "Our Socialization Messages and How They Block Our Success" and "Feminine Behaviour Patterns that Can Block Workplace Success" from Unit 9 of *Bridges to Equity Program Manual* and *Participant's Workbook.* Conduct a workshop using re-visioning exercises # 1 and 2, examining the programming messages many women and men have received, and # 3, which deals with potential positive changes to that programming.
- Read the Unit 9 section on Women's Language Patterns and complete the checklists. Which strategies do the learners feel most comfortable using? Which are seen as more difficult? Why?

Specific Learning Objectives	Teaching/Assessment Strategies
	• Conduct exercises Juggling Roles # 60 and Influence of Gender Stereotypes # 61 from *Personal and Life Management Skills for Women* Stress and Assertiveness sections, which deal with sex-role stereotyping. Ask learners to make journal entries that describe where they have encountered barriers as result of stereotyping.
	• Show the film: *Killing Us Softly*. Conduct a class discussion that responds to the questions: What is the message these images are presenting about women? How do they make you feel about yourself? How do you think they make others act toward women? What can be done to combat those messages, internally? externally?
• Analyse how female gender-role stereotyping limits occupational choices.	• Show the films: *Anything You Want To Be and What About you?* Compare and contrast the assumptions in the two films.
	• Discuss and analyse situations from the learners' own experiences where choices have been limited. What influenced them to accept limitation? What has changed that would enable them to make a different choice now?

RESOURCES

Books

- Berman, Sandy and Adrienne Montani. *Cross-Cultural Lifeskills - A Manual for Facilitators.* Surrey, British Columbia: Surrey Delta Immigrant Services Society. Revised 1993.

  This book adapts material from Personal and Life Management Skills for Women, Discovering Life Skills for Women for a culturally mixed participant group, and draws from a number of cross-cultural and 'Dealing with Racism' resources. While it has exercises to assist immigrants to understand the Canadian System and culture, it also provides excellent exercises to examine cross-cultural awareness and conflict resolution issues among and between cultures which lead to better understanding all around.

- Bohnen, Elisabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual.* Toronto: City of Toronto. 1991. (Office of the City Clerk, Resource and Publications, 100 Queen St West, To. Ontario M5H 2N2 Fax: (416) 392-7999. (See Develop Self-Awareness for review)

- Booth Susan. *Bridges to Equity Participants Workbook.* Toronto: City of Toronto. 1991. (See "Develop Self-Awareness for review")

- Cohen, Marcy and Margaret White. *Tools For Change: A Curriculum About Women And Work.* Burnaby: B.C. Women's Skill Development Society. Distributed by Learning Resources Society. 1982. See Explore the Position of Women in the Labour Force unit for a review.

  The cartoons on pp. 88-98 provide an excellent vehicle for exploring women's roles. This book is out of print, with only limited copies available. Contact Butterwick: Ph: (604) 524-0788.

- Coulter, Rebecca. *Gender Socialization: New Ways, New World.* Ottawa/Victoria: Working Group of Status of Women Officials on Gender Equity in Education and Training - June 1993. Province of British Columbia Ministry of Women's Equality, Status of Women Canada.

- Sargent, Alice G. *Beyond Sex Roles.* New York: West Publishing Company. 1977. Exercises 9, 10, and 11, (pp. 33-37) on parental and personal role expectations.

  Still a unique, superb book with exercises, workshops, and articles dealing with gender typing, socialization, minority issues, assertiveness training, life planning, and male and female relationships. Good for use with both men and women. Available on interlibrary loan.

- Zeiglar, Maggie, and Sandy Berman. Linda Coyle, Ed. *Personal and Life Management Skills for Women.* Vol. II, Vol. III. Surrey, British Columbia: Kwantlen University College. Bookstore Ph: (604) 599-2100. Revised 1997 (See the unit "Apply the Techniques of Stress Management" for review.)

Films and Videos

- *Anything You Want To Be.* Marlin Films, 16 mm, 8 minutes. Available from many provincial media distribution centres.

  A short, humorous approach showing what the options really are for a young woman interested in pursuing them. Clear and to the point.

- Liberson, Donna. *A Good Job For A Woman Series.* VHS, Six 24 minute programs: *Mathematics; Agriculture; Ecology; Maritime Careers; Aviation; Engineers;* Vancouver. Liber Films. Ph: (604) 253-0135, Fax: 253-4216.

  Killing Us Softly; Still Killing Us Softly. 16mm/video, 30 min. each. Kinetic Films. Ph: 1-800-263-6910. www.kinetic.com

  Each of these films cost over $500. Check with local colleges and HRDC Regional offices to see if they are available.

Still the best definitive work on how the media presents the images of women with which we are all socialized. "Jean Kilbourne mixes fact, insight, humour and outrage to bring her audience to see that although ads may seen harmless or funny by themselves, they add up to a powerful form of cultural conditioning."

- *More Than Just a Job.* VHS and Beta. 15 min. Toronto: Ontario Women's Directorate. Ph: (416) 326-7848. 1990.

  This video is about women and men who have made career choices based on their personal interests and talents rather than on sex-role stereotyped ideas about what is "women's work" and "men's work."

- *Ursula Franklin: Soul of a Scientist.* VHS 30 min. Written, directed, and narrated by Heather Menzies. Ottawa: Caleton University. 1988. Distributor: Image Media Services Ltd. Richmond, B.C.

  This program does a biographical sketch of a respected Canandian scientist active in the peace movement, the women's movement, and the environmental movement. Narrative accounts of her personal history provide illuminating background for her own commments in interviews and as the keynote speaker for a conference on technology.

- *What About You?*, video. Available from Human Resources Development Canada/Labour, Women's Bureau. 1993. Contact Mary Oderico Ph: (819) 994-5571.

  An upbeat and inspiring film demonstrating some of what women can accomplish in the areas of trades and technologies.

- *Women in Science series.* VHS 22-28 min. Directed by Ted Benoit, Spectra Video Productions. 1990. MAG (Magic Lantern Ltd. Ph: (West) 1-800-263-1818 (East) 1-800-263-1717.

  7 videos, each profiling 2 women scientists and technologists at various stages of life and career levels.

Working It Out—An Introduction[20]

Think about why you work. Does work offer you some measure of dignity and financial independence? Is it a way for you to gain recognition for your talents, to meet other people, to create something of personal value? Maybe your work doesn't do any of this—but at the very least, a job can put food on the table and help make ends meet.

A woman has the right to work outside the home. Whether she is single, married, or divorced; young or old; has young children, no children, or is a sole support mother; whether she lives with her parents, friends, alone, or with a mate that is well paid, women have the right to work and should be able to do it without paying a social penalty.

But any working woman realizes this just isn't the case. We've yet to win the unconditional right to paid work. If we're to make any inroads at all, three barriers will have to be overcome.

Our first hurdle is the difference in wages between men and women. Men earn more. A lot more. In fact, a woman working in Canada today earns only 58 cents for every dollar earned by a man ([1])—even though average educational levels are the same for both sexes.

The single most important factor in determining the pay scale for a job isn't experience, ability, or expertise. It is the worker's sex. Women are paid less than men, even when they are performing similar or identical tasks. ([2])

We have to ask why, in a modern society where the political emancipation of women is loudly proclaimed, we continue to see blatant economic exploitation. Why? Because equality in the workplace requires a radical change in the status quo.

Our task is not an easy one. It is nothing less than redefining women's roles. It requires the overthrow of powerful historical forces and the vested interests, which continue to benefit from our overworked, underpaid status.

The second barrier preventing our equality in the workplace is the isolation of women into the job ghettos. Over 60 per cent of us are channelled into just three job categories: clerical, sales and service. ([3]) These jobs form what can be called a "secondary" labour market—a market where jobs are scarce, wages low, where there is little room for advancement, and little chance to move into the male-dominated "primary" market.

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[20] "Working It out - An Introduction" is from, *The Women's Workbook*, edited by Patti Schom-Moffatt, Toronto, Ontario: Between the Lines, 1983, and is reproduced here with permission.

This situation isn't a new phenomenon either. As Louise Kapp Howe points out in Pink Collar Workers, today's working women face the same limited opportunities as our turn-of-the-century counterparts:

In 1900, the most common occupation for an American woman was unpaid labour in the home. As is still true today. In 1900, while a fraction of the women were filling all those untraditional jobs, most women in the paid labour force were in occupations disproportionately filled by women. Still true today. In 1900 there was one occupation that accounted for nearly a third of the female labour force: domestic service. Today there is one occupation that accounts for over a third: clerical work. In 1900 most members of the female labour force could be found in agricultural, manufacturing or domestic service jobs. Today nearly two-thirds can be found in clerical, service, or sales jobs.(4)

Concentrating women into a few female job ghettos produces stiff competition for a scarce supply of jobs. In the 1980s, 70 per cent of all new labour market entrants will be women (5), and if economic conditions don't improve, employers will always have a large surplus of unemployed, financially desperate women willing to accept work in spite of low pay or poor working conditions.

Wages in these ghetto occupations are often kept at or just above minimum levels. In all cases, the wages are lower than they would be if more jobs were available, or if men were working in them. Three-quarters of employed women—but only 40 per cent of employed men—earn less than $12,000 a year. (6) In this way, segregating women into certain jobs subsidizes the corporations of this country.

Changing labour market conditions could make matters worse. It has been predicted that over the next decade labour force growth will decline, and some jobs will disappear altogether due to technological change. A serious imbalance is expected between the skill requirements of employers and skills available in the labour pool. Women aren't training in the skilled trades, an area where shortages already exist. We continue to enter the workplace in traditional female job areas—areas that are seeing more and more cutbacks, layoffs, and job erosion.

The final hurdle we have to jump is that of the double day. After working eight hours in the paid workplace, many of us work another full shift at home. Housework and childcare almost always remain the responsibility of women, even when we work outside the home.

The amount of time spent on housework depends on the number of children in the family, the age of the youngest child, and the work status of the women. (7) Married women with a pre-school-aged child add abut 32 working hours onto their full-time jobs. A surprising fact is that single women with a child the same age add only 19 hours. (8) Research studies don't try to explain this difference but perhaps a fourth factor should be included: the presence of a man in the household. We can assume that most of the additional 13 hours is spent taking care of the man—preparing lunches and suppers, doing laundry, and so on. Other studies have shown that men don't increase their contribution to housework when women work outside the home. (9)

More women are working than ever before, in all age categories. Single women, women with young children, and married women are all entering the workplace. The majority of women then, are working 70 or 80 hours every week, with no leisure time and no vacations. As a result, women are under tremendous pressure. Not only are we juggling the responsibilities of two jobs, but we experience low status and little reward in both of them. The addition of what amounts to a second job also makes attendance at meetings, union events, or even putting in overtime at the workplace next to impossible.

As women try to balance family responsibilities and paid work, there is a marked lack in the support of quality daycare facilities. Only 5 per cent of children under two years of age have spaces in government-licensed centres. One child in ten between the ages of two and six is in daycare, and only 0.39 per cent of children aged six to sixteen are enrolled in licensed after-school or lunchtime care. (10) When a child is sick or has a doctor's appointment, it's the woman who leaves her job. Bearing children takes time, too. Since women are still seen as the primary parent, many women's careers are interrupted by caring for young children.

Why does the situation continue to exist? Surely, after examining the evidence, any reasonable person would agree the working women are being shortchanged. In fact, many people (mostly men) believe that things aren't really so bad; that women are responsible for this situation, and that women's struggles are unimportant when compared to "real" issues. What has developed, justifying these beliefs, is a series of myths about women's work. The majority of men, and even some women, have internalized these beliefs, and operate according to them.

It's time to examine the arguments that have been used, time and time again, to obscure the facts, deny the reality, excuse the behaviour, rationalize the wrongs, and generally keep women down.

Short-Term Strategies

Short-term strategies are needed to counter handicaps that women experience in the workforce. By adopting progressive programs and regulations, we can speed up the transition to more equitable work situations.

The concept of equal pay for work of equal value goes beyond supporting equal pay for women and men engaged in identical occupations (which is already law throughout Canada). It holds that if two different jobs have an equal value—established through a careful and thorough point-scoring system—then the workers should also receive equal wages. Because many of us will be spending the rest of our working lives in female job ghettos (where no male counterparts exist), it's only through equal pay for work of equal value legislation that women are likely to see wage equity in the short term.

Although the equal pay concept is supported by most women, there are few examples of enacted legislation. [Several of the provinces] have officially endorsed the concept, and compliance to regulations is proving exceedingly difficult to enforce.

But our strategies can't end there. We need strong financial incentives or quotas for corporations to hire across traditional sex lines, thereby increasing the participation of women in a broad spectrum of occupations. We need information and training programs at the high school and college levels that emphasize technical and scientific skills and broaden horizons into non-traditional areas. We need media codes to prevent the continued exploitation of women in advertising; for too long the media has perpetuated stereotypes of women as petty, incapable, simple beings relegated to service in the kitchen or bedroom. We need more workshops and training for women to build strength and confidence—assertiveness training, self-defence skills, and more information about women's health will help us achieve this strength.

We need to encourage more women to join trade unions to ensure at least minimum protection of our jobs. We have to expect that trade unions will begin to organize women working in female job ghettos, and we have to support those unions that provide a forum for collective action by women.

And finally, we need action now to ensure that rapid technological changes in the area of microelectronics do not victimize clerical workers, most of whom are women. Without special action to give women a voice, the new technologies will serve to further exploit us by reducing job opportunities and increasing job monotony, introducing at the same time new risks to our health.

Essential Support Services

If working women are not to be penalized by our additional roles as mothers and wives, we require support systems that are both permanent and dependable. The building of such support systems constitutes a long-term strategy for the liberation of women, both in and out of the workplace.

We need daycare expanded so that all women and families who require childcare can be assured that their children are being well looked after, at reasonable cost, in approved and monitored centres—without having to wait six months to a year for a space. We need more flexibility in the structure of work so that women can work part-time without loss in benefits, seniority or pensions. We need to see flexible hours, four-day work weeks, lengthened maternity and paternity leave, and expanded opportunities for job sharing. We need to see workplaces become safer, healthier places to be. We need to see men taking their turn at home, for there will certainly be no equity in the workplace until the burden of responsibility for children is shared by all parents. In all of our social institutions, we require policies and programs that support men who share child-care responsibilities. This means that children must be viewed as a community resource and that the task of raising children must be seen as an important one.

Many of these support measures will also serve to minimize the current high levels of stress that women experience both in and out of the workplace. Sexual harassment, however, is a major source of stress for women, and special efforts will have to be made to defend women and sensitize men. Since stress and harassment are likely to be a problem for the immediate future, we need feminist counselling services—counselling that places an individual's problems within the context of problems that all women face living and working in a sexist society.

Finally, we have to make sure that women have control over our own lives—that we are in a position to make well-informed choices about our health, our work, our lives.

Endnotes

(1) *Women in the Labour Force, Part II*. Women's Bureau, Labour Canada, 1978-1979. p. 46.

(2) Ibid., Table IV, p. 17

(3) *Women in the Labour Force, Part I*. Women's Bureau, Labour Canada, 1978-1979. p. iv.

(4) Howe, Louise Kapp. Pink Collar Workers. New York: Putnam, 1976. p. 16.

(5) *Labour Market Development in the 1980s*. Employment and Immigration Canada, July 1981. p. 15.

(6) Holmes, R.A., *Male-Female Earning Differentials in Canada*. Human Resources XI(1). Winter 1976. p.114.

(7) Walker and Woods. *Time Use: A Measure of Household Production of Family Goods and Services*. Washington: Centre for the Family of the American Home Economics Association, 1976. pp. 259-260.

(8) Adler and Hawrylyshyn. *Estimates of the Value of Household Work in Canada 1961 and 1971*. 1977. p. 4.

(9) Walker, Kathryn. "Time Spent by Husbands in Household Work," in *Family Economics Review*, June 1970. pp. 8-11.

(10) *Status of Daycare in Canada 1978*. Health and Welfare Canada. National Daycare Information Centre, 1979.

(11) Women's Bureau, Labour Canada. *Where Are You Going?* Ottawa, 1980.

(12) *Market Development in the 1980s*. Employment and Immigration Canada, July 1981. p. 15.

(13) Women's Bureau, Labour Canada. *Where Are You Going?* Ottawa, 1980.

(14) Statistics Canada, May 1982, Cat. no. 71 -001. This refers to all data on this page.

(15) Beche, Janet, et al. *Update on the Status of Women in British Columbia*. 1978.

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Explore the Position of Women in the Labour Force

LEARNING OUTCOMES

Upon completion of this unit, learners should be able to explore the evolution of women's work in trades and technology and describe the position of women in today's labour force.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Explore and describe the history of women's work in trades and technology.	• Show the films, *Great Grandmother* and *Rosie The Riveter* and/or *Keeping the Home Fires Burning: Women, War & Unions in BC.* Discuss issues arising from the films. Compare the work done by women, using the organizers: pay, types of work, working conditions, etc. Describe the changes in legislation and support systems necessary for women's participation. • Analyse and discuss the impact of class distinctions on women's work. • Read and discuss "Hard-Hatted Women: Reflections on Blue-Collar Employment" from *Women in the Work Force,* pp. 29-32. • Review "But What Can A Woman Be?—A Short History" from *Tools For Change,* pp. 23-32.
• Examine the position of women in the contemporary labour force.	• Distribute the Handout: Women in the Labour Force—Facts, Figures, Present and Future Projections, and discuss, using these questions: - What are the three strongest messages you gather from this information? - To what factors do you attribute the wage gap? - To what do you attribute the increase in self-employed women? - What is the impact on job opportunities and wage levels of apprenticeship and post-secondary education? • Using the Internet, reports from Status of Women and private sector industry reports (e.g., Sector Studies) and other resources, have learners develop a set of statistics that describe a particular aspect of women's trade and technical workforce activity, and present a report to the class that analyzes the data and makes recommendations for dealing with the issues identified. • Ask learners to develop a list of factors leading to job satisfaction (see "Finding Job Satisfaction" in *Positive Works*). In small groups, discuss what "trade offs" might need to be considered, and which would be easier or more difficult to make.

Specific Learning Objectives	Teaching/Assessment Strategies
• Examine the position of women in the local labour force.	• Work with learners to use information from local experts (e.g., women in WITT groups, women's centres, economic development support agencies, counsellors). Put on a panel presentation with local industry and unions represented, HRDC reps and others, with learners providing a set of questions to be answered, related to where women are working in the community and how they manage job satisfaction issues at those workplaces.

RESOURCES

Reports

- Statistics Canada 1995. *Labour Force Survey.*
- Statistics Canada 1995. *Women and the Labour Force*, Catalogue #75-507
- Canada Employment and Immigration (HRDC). *Women in the Labour Force.* 1995
- *Profile of Women in British Columbia*, Economic Services Branch HRDC 1994.
- Statistics Canada 1993: *Income Distribution by Age in Canada; Income Distribution by Size in Canada.*
- *Women in the Labour Force*, Kootenay Women in Trades & Technology 1992.
- Statistics Canada 1991 *Census: Educational Attainment of Canadians; Employment Income*; Trends in Occupation & Industry; Family Income.
- *Labour Market Bulletin*, prepared by Diane Alfred Economic Services, BC/Yukon Region, 1990.
- Research the Internet by province and federally.
- Consult Canadian Labour Market and Productivity Centre; Canadian Labour Force Development Board.
- *Winning With Women in Trades, Technology, Science and Engineering—Report of the National Advisory Board on Science and Technology.* Ottawa, Ontario, 1993. Presented to the Prime Minister of Canada.
- *Setting the Stage for the Next Century: The Federal Plan for Gender Equality.* Status of Women Canada. Ottawa, Ontario: Canada's presentation to the Beijing International Women's Conference. 1996.

Books

- Acton, Janice; Goldsmith, Penny; and Shepard, Bonnie, eds. *Women at Work 1850-1930.* Women's Press, 1974.

  Collection of rare historical information on working women in Canada, written in an interesting and easy-to-read style.

- Braid, Kate. *Building The Future - Profiles of Canadian Women In Trades; Looking Ahead — Profiles of Two Canadian Women In Trades.* Ottawa: Labour Canada, Women's Bureau. 1990. (819 994-0543) Catalogue # L016-1688/89B.

  Printed in both French and English this book profiles 12 different women's working lives in the trades and technology workforce, with photos.

- Braid, Kate. *Covering Rough Ground.* Vancouver: Polestar. 1991

  Kate Braid is a journeywoman carpenter and a poet. This is a collections of poems from a woman with great vision.

- David-McNeil, Jeannine. "The Changing Economic Status of the Female Labour Force in Canada", in *Towards Equity.* Economic Council of Canada: Government of Canada Publishers, 1985.

  A variety of statistics with some analysis and interpretation. Included in a volume of papers given on many of the subjects necessary for employment equity.

- *Tools For Change: A Curriculum About Women and Work.* Burnaby, British Columbia: Women's Skill Development Society, 4340 Carson Street, Burnaby, B.C., 1982. (Check your college library)

  While out of print, this is still a very useful collection of information, articles, discussion questions, and learning activities on women's work in all fields, including trades and technology. Looks at equal pay, education and training, the computer age, and overcoming barriers such as math anxiety and gender-role stereotyping. Contains resource references.

- Phillips, Paul and Erin Phillips. *Women and Work: Inequality in the Canadian Labour Market.* Toronto: James Lorimer & Company. 1993
- *Women in the Labour Force.* Ottawa, Ontario: Publications Distribution Centre, Labour Canada, 1985-1986.

  Massive amounts of fairly comprehensible statistics on labour force participation, earnings and income, education, benefits, and unionization, with analysis.
- *Women In The Work Force.* New York: Praegar Publishers, CBS Inc, 1982.

  A significant overview of historical patterns and barrier issues involving women in blue-collar employment. Includes documented research on women workers in the steel industry in the U.S.A., within a collection of articles on many aspects of women's work.

Films and Videos

- *Great Grandmother*, NFB, 16 mm, 29 minutes, 1975. Available from in BC: AEMAC
  Ph: (604) 323-5217 Fax: (604) 323-5475.

  A sensitive, exciting, and musical story of the settling of the Canadian West, based on letters, memories, and legends of our pioneering grandmothers. Wonderful role models who fought legal and political discrimination, as well as harsh pioneer living; their courage is catching.
- Diamond, Sara. VHS. 49 min. *Keeping the Home Fires Burning: Women, War Work & Unions in British Columbia.* Vancouver, B.C. Sara Diamond; Women's Labour History Project. 1988.

  Diamond uses archival footage, dramatizations, and filmed interviews of five women who went into the work force during World War II to show the jobs women performed in the shipbuilding, aircraft construction, etc. Pay inequities and concern for safe working conditions led to a drive to unionize. After the war, many women were forced out of work by returning veterans.
- *The Life and Times of Rosie the Riveter.* Full Frame Film & Video Distribution. VHS, 60 minutes, 1980. In BC: AEMAC.
  Ph: (604) 323-5217, Fax: (604) 323-5475

  An excellent documentary on skilled women workers in the U.S.A. during World War II Personal interviews with five "Rosies" and wartime footage show how successfully women performed during wartime.
- *The Visible Woman.* Marlin Motion Pictures, 16 mm, 30 minutes, 1975. In BC: MEC. AEMAC will have supplier information:
  Ph: (604) 323-5217 Fax: (604) 323-5475.

  An absorbing history of women and women's rights in Canada. Uses stills, film footage, and quotes as it traces history in an entertaining and informative way.

Women in the Labour Force—Facts, Figures, Present and Future Projections[21]

While the number of Canadian women currently in the paid labour force is significantly increasing, statistics show that barriers to workplace equality continue. Women are concentrated in a few occupations where incomes are low and opportunities for advancement are minimal. In addition to their work in the labour force, married women continue to be responsible for childcare and household work. We are seeing the beginning of change in this situation; but the combination is ever more difficult for the continually growing number of female single parents.

More women in the labour force

- Women comprise 45% of the labour force in Canada (Women in the Labour Force Report, Statistics Canada. 1995).
- In Canada, 68.3% of all women between the ages of 15 and 54 worked in the paid labour force in 1994. This percentage is up from 1976, when the average figure was 56%.
- The projection is that 85% of new entrants to the labour force in 1990s will be women. Between 1986 and 1991, the labour force participation rate for females between 40 - 44 years of age increased from 66.6% to 74.9%. The number of employed females in all industries grew by 27.5%.
- A total of 38% of all women in the labour force are single, divorced, widowed, or separated.
- 59.9% of women who are single parents work in the paid labour force.
- A Canadian women can now expect to spend an average of 30-50 years in the paid labour force and only an average of 7 years at home child-rearing.
- Between 1971 and 1986, the largest increase in female labour force participation took place among married women; in 1971 their participation rate was 37%; by 1986 it had risen to 57.4%. In 1995, the participation rate for married women was 61.3%. If the over 54 category is removed, where the participation rate is lower and brings the percentages down, the numbers would be much higher.
- Of the 1.7 million women not in the labour force with children at home, only 19% had never been employed and 56.6% of these were over 45 years of age.
- In 1993, in lone parent families headed by women: 25% of those with children under 3 worked in the paid labour force; 44% with children 3 - 5 years of age worked in the paid labour force; and 60 percent of single parent women with children 6 - 15 worked in the paid labour force.
- 65% of mothers in two parent families with children under 16 were employed.

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[21] This handout was developed and updated by Kootenay WITT for use in The Workplace in Transition: Integrating Women Effectively seminar and *Options Unlimited, A Role Modelling Program to Expand Career Opportunities*. It is used with permission.

Women work for family support

- In 1994, 48% of all women who work are heads of households. This is up from 41% in 1986. Many of the other 52% are married and most of these women work to bring their family's income above the poverty line.
- 59.6% of all low income families are headed by women.
- In BC, female lone parents formed 82.4% of all lone parents.
- In an urban area, the low income cutoff for a family of 3 is $25,623. This is based on having to spend more than 54.7% of income on the necessities of living: food, clothing and shelter.
- About 41.4% of all families headed by females live below the poverty line. The comparable figure for families headed by men is only 10.4%.
- One in five Canadian women lives below the poverty line. That's up from one in six in 1988.
- 69.3% of all part-time workers in 1993 were women.

Women are concentrated in a few occupations

- The concentration of women in clerical, sales, and service occupations increased from 55.% in 1971 to 58.1% in 1992 (Women and the Labour Force, Cat. 75-507 StatsCanada).
- In 1993, women made up 80.2% of all workers in clerical occupations, 56.8% of workers in all service occupations, and 42.2% of workers in all managerial, professional, and administrative occupations (of which the largest concentration are in teaching and nursing). This latter number is down from 45.4% in 1986. 45% of all women work in clerical and service occupations.
- From 1971 to today, the three occupations that employed most women were: secretaries, bookkeepers, and salespersons. One of every five women in the labour force was in one of these relatively low-paying occupations (Women and the Labour Force, Cat. 98-125 Stats Canada).
- Women's share of managerial employment increased from 15.5% to 1971 to 31.5% in 1986. In 1995, they made up 1.8% of construction workers, and 20% of processing, machining, and fabrication workers.
- There has been a significant increase in the number of women running their own businesses. Between 1988 - 1993, the number of self-employed women in BC grew by over 40 %. As a result, women represented 34.1% of all self-employed workers in 1993.

Working women have lower earnings than men

- The average wage for a female head of family in Canada in 1993 was $31,469 per year; the average wage for a male head was $56,746 per year. Women earned 55.5% of men's earnings in the same situation.
- Statistics from 1995 show that women in Canada earn 72 cents for every dollar a man earns for full-time, full-year employment, and an average of 63.8% overall. Between 1986 - 1991, the average female employment income, in British Columbia, rose from 63.7% to 65.2% of that of males (Stats Canada and Profile of Women in B.C. HRDC).
- Women's average earning in 1991 ranged from a high of $28,299 for managers and professionals to $10,266 for those in service occupations (Women in Canada, A Statistical Report, Stats Canada).
- Professional women also had the highest earnings relative to those of their male colleagues; however, women in professional occupations still only had earnings of 64.8% of those of male professionals. At the other end of the scale, the earnings of women in product fabrication were 61.4% of those of men, while the earnings of women in service jobs were 61% of those of men.
- Females with university degrees earned 74.2% of the wages of similarly educated men. Women with Grade 9 or less made 73.4% of the wages of men in the same group (Stats Canada 1993).
- Women earned 71.1% of male earnings among workers employed less than one year; 71.3% among workers with more than 20 years with the same employer (Stats Canada 1990).

Genders dominate selected professional fields

- Fields of study that tended to be female-dominated were legal secretary, medical secretary and general secretary.
- Fields of study that tended to be dominated by males were plumbing, air conditioning and refrigeration, and construction electrician.
- The top fields of study for male baccalaureate (BA) degree graduates were chemical and biological engineering, rehabilitation medicine, and geological engineering.
- In 1991/92, the top fields of study for female baccalaureate degree graduates were medicine and health, education, fine and applied arts, agriculture and biology.

- Women made up 55.5% of all BA learners in 1991/92, up from 37% in 1970-71. They also represented 48.4% of Masters learners and 35.8% of doctoral students. Women in university, however, are over-represented in part-time studies (Women in Canada, A Statistical Report, Stats Canada).
- In BC, the proportion of females who possessed a university degree was much higher for those aged 25-54 (13.7%) than for those aged 55 or older (4.8%) (Profile of Women In British Columbia, HRDC. 1994).
- The female employment to population ratio rose by 17.9% for females aged 65 and over between 1986 and 1991.
- Higher education, especially a university degree, is associated with higher income for both sexes. Nevertheless, women with a university degree still earned, in 1993, only $31,206, 64.5% of men with a university degree. Female university graduate average earnings were only slightly more than a male high school graduate who had average earnings of $28,928, while a female high school graduate earned on average $18,685 (Income distribution by size in Canada Cat.13-207).
- Employment income grew with education except in the category of "some post-secondary." It was only with completion that employment income rose.

The future

Currently one in every five Canadian woman lives below the poverty line, and the numbers are growing. Many different kinds of women are included here: older women, young women with children, single women and married women. Most women have been taught to believe that marriage will protect them from financial hardship. But the fact is that more than 75% of women living in poverty today are currently married, or have been married in the past.

Women are recognizing the economic realities of these times: many of the clerical, service, and manufacturing jobs that were open to them in the past are being lost to technological change.

Ottawa has projected that two million Canadian jobs will be lost to technology during the 1990s. The jobs that will be created by new technology are in fields that have traditionally been dominated by men.

Another reality that we have to face is the number of tradespeople in this county who are over 50 years old, and the number of younger workers who have not been trained to replace them. The numbers lost to attrition are proving to be a major factor in critical trades worker shortages.

Trades and technical workers have gained new respect as their importance to Canadian industry has become more evident. With the activities of trade unions, the resulting improvements in living standards have made trade and technical work an important and viable career option for young people. Technological innovations have lessened the physical requirements of the work. Increased job satisfaction and higher wages have made this work more attractive to girls and women. The increased opportunities for having a positive impact on the environment has also led more young people to consider career choices in science and technology.

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SOURCE MATERIAL:

- Statistics Canada 1995. Labour Force Survey
- Statistics Canada 1995. Women and the Labour Force, Catalogue #75-507
- Canada Employment & Immigration (HRDC). Women in the Labour Force. 1995
- Profile of Women in British Columbia, Economic Services Branch HRDC, 1994
- Statistics Canada 1993:
  Income distribution by age in Canada
- Women in the Labour Force, Kootenay Women in Trades & Technology. 1992
- Statistics Canada 1991 Census:
  Educational Attainment of Canadians
  Employment Income
  Trends in Occupation and Industry
  Family Income
- Labour Market Bulletin, prepared by Diane Alfred Economic Services, BC/Yukon Region, 1990.
- Women in British Columbia: A Statistical Report, Policynet Communications Ltd. April 1990.
- Labour Market Activity Survey, Profiles, Canada's Women. 1987
- Province of BC. Women in the Labour Market, Labour Research Bulletin, 1986
- Douglas College. Tools for Change: A Curriculum on Women and Work, 1982

Recognize, Adapt and Influence Workplace Culture[22]

LEARNING OUTCOME

Upon completion of this unit, learners will be able to identify and practise useful strategies to overcome obstacles to success in trades and technology work for women.

Specific Learning Objectives	Teaching/Assessment Strategies
• Develop awareness of societal barriers.	• Divide into small groups and place a labelled headband on each participant, not letting them see their label (disabled person in wheelchair, aboriginal person from remote area, visible minority with little English, housewife, illiterate truck driver, bag lady, university professor, male prostitute, clergy, etc). Ask them not to tell each other what the labels say, but to react to each other as society tends to react to one who represents that label. Ask each group to complete one of the following tasks in 10 minutes: Plan a picnic; plan a fund-raising activity; help each other pick a job to apply for from the classified ads; write a résumé; choose a course of study from a college calendar. Debrief by asking what kinds of assumptions were operating in each situation.
• Identify attractions and barriers to trades and technology jobs for women.	• Show the A/V *What Happens To Women In Tradesland*, and/or *To Live In My House*. Brainstorm lists of attractions from the show and from experience. Next, list barriers, again both from the show and from learners' ideas and experience. Ensure that both internal and external barriers are identified. Use the "Resource List for Facilitators' (Resource #1) for additional ideas. Remember that women who are aboriginal, visible minorities, poor and/or disabled face additional barriers. What are they? Use *Employment Equity for Aboriginal Women* as a resource. • Review Barriers section of Equity Access to Apprenticeship Resource Kit. Engage in a class discussion focusing on the questions: - Do you agree that these are barriers? - Have you ever experienced similar situations? - What suggestions would you have for those who encounter them? - Where would you go for support/information? • Read and discuss Handout: "Women in a Man's Territory: The Sexuality of the Non Traditional Workplace" by Kate Braid. Point out to learners that understanding language issues is important for women entering these fields. It is also important to understand that one must choose one's battles carefully in order to succeed.

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[22] This module was developed for WITT National Network by Marcia Braundy, Journeywomen Ventures Ltd. Thanks to Mildred Minty and the Province of Newfoundland and Labrador for the first teaching strategy which was originally developed for their Blinkers workshop. It is used here with permission.

Specific Learning Objectives	**Teaching/Assessment Strategies**
	• Ask learners to read the first two sections of *Covering Rough Ground* by Kate Braid, and choose three poems that represent: their fears, their hopes, and/or what they would like to achieve. Then form small groups, read the poems to each other and describe why they were chosen.
• Demonstrate knowledge of women's potential for success in trades and technology work.	• Read articles on women entering trades and technology jobs, such as those found in the first section of *Surviving and Thriving - Women in Trades and Technology and Employment Equity* and *Building the Future - Profiles of Canadian Women in Trades*, and *Employment Equity for Aboriginal Women*. Use the library and the Internet to find magazine and newspaper articles describing successful trades or technology work done by women, visible minorities, aboriginal people or people with disabilities. Stories, advice, and suggestions from women working in the field are invaluable.
	• Using the articles and books researched above, as well as from *Strategies That Work - Women in Trades, Technology and Applied Science* (particularly Kate Braid's article), look for: the variety of jobs women are undertaking; the challenges they face; the strategies they use to achieve success, and programs put in place to support or assist them.
	• Ask learners to choose several stories that represent effective strategies and make a presentation to the class describing what makes them so.
• Identify and practise useful strategies for responding to traditional assumptions and expectations about women in trades and technical work.	• Form small groups and give each group a portion of Handout # 2: Assumptions A,B,C, or D. Ask learners to develop responses to the statements as if they had just heard an employer, co-worker, or counsellor say it. Present responses in the large group. Encourage them to: - respond non-defensively (it's not personal); - examine the validity of the statement; - determine whether they feel it comes from socialization or intention; - combine humour with responses wherever possible. (Much can be said directly, from a non-defensive place, with a smile on your face and a twinkle in your eye); and - develop/maintain their belief in what they are doing. Ask learners to outline/evaluate criteria used to develop their responses to the statements.

Specific Learning Objectives	Teaching/Assessment Strategies
	• Read Chapter 2: "The Head Start For Women" in *High-Tech Career Strategies For Women*, pp. 29-50. Identify at least ten statements (with sources) that reflect women's potential for success in these fields. Use the list on p. 48 in a positive self-statement exercise (affirmations).
• Assess and describe strategies for overcoming the obstacles.	• Review items on the barriers list generated in Activity 1 in this unit. In small groups, learners take sections of the list and 1) identify which they have a role in overcoming, and describe a number of solutions involved in accomplishing that; 2) identify who has responsibility for the tasks involved; and 3) discuss how to gather the necessary support for solutions. • Read *Welcoming Women into Trades, Technology, Operations and Blue Collar Work: A Checklist of Strategies* and/or *Retention: Support Strategies for Women in Trades, Technology and Operations* to identify some potential strategies that learners would feel comfortable using and why. • Have learners develop and act out scenarios, in which they use assertive skills to overcome the particular barriers they have been analyzing. What works? What doesn't? What makes the difference? • Use the material developed in the Assumptions teaching strategy in role play situations and debrief to determine the effect.

RESOURCES

Books and Article

- Aitkens, Fran. *Proceedings of the Western Regional Women in Trades & Technology Conference.* May 6-9, 1993. Parksville, British Columbia. Queen's Printer, Victoria, BC. 1993. Available from South Island WITT.
  Ph: (250) 474-1128 Fax: (250) 743-7796
  ISBN 0-7726-2298-1

  Filled with strategies for success in TTO occupations.

- Bohnen, Elizabeth and Judy Klie. *Retention: Support Strategies for Women in Trades, Technology & Operations Work.* Toronto: City of Toronto, 1990. Attention: Resource & Publication Centre Ph: (416) 392-7410
  Fax: (416) 392-1553

  This inexpensive booklet provides innovative workplace strategies for dealing with training, addressing resistance to change, job supports, accommodations, unions, and supporting the balance between work and family.

- Braid, Kate. *Building The Future - Profiles of Canadian Women in Trades; Looking Ahead - Profiles of Two Canadian Women in Trades.* Ottawa: Labour Canada, Women's Bureau, 1990. Ph: (819) 994-0543

  First hand stories of tradeswomen's lives with photos.

- Braid, Kate. "Women in a Man's Territory: The Sexuality of the Non-Traditional Workplace" in *Canadian Women's Studies Journal*, Winter 1981.

- Braundy, Marcia, managing ed. *Surviving and Thriving - Women In Trades & Technology and Employment Equity.* RR # 1, Winlaw, British Columbia: Kootenay WITT, 1989.
  Ph: (250) 226-7624

  This unique Canadian book describes women's experience in trades, technology, operations and blue collar work, and provides both analysis and strategies for succeeding. It also presents some of the major and most effective initiatives by industry to increase the participation of women in these fields. There is quite a good section on women and new technology.

- Fawcett, Gail PhD. *Living with Disability: An Economic Portrait.* Ottawa: Office for Disability Issues Human Resources Development Canada, 1996. ISBN: 0-662-25110-5. Available through Enquiries Centre Fax: (819) 953-7260.

  Dr. Fawcett is a Research Associate at the Centre for International Statistics at the Canadian Council on Social Development. This book provides a detailed analysis of the most recent statistics concerning issues for people with disabilities and gives special attention to the situation for women.

- *Equal Citizenship for Canadians with Disabilities, The will to act.* Ottawa: Government of Canada, 1996. For copies or alternate format contact: Enquiries Centre Human Resources Development Canada Fax: (819) 953-7260

  The findings of the Federal Task Force on Disability Issues analyzes factors and responsibilities, and makes recommendations for intervention and remediation.

- Margolis, Rhonda and Shirley Coomber. *Disability Issues in the Classroom: Meeting the Challenge.* Facilitator Guide. For the Province of British Columbia, Ministry of Skills, Training and Labour. January 1, 1996.

- Stead, Joanne. *"Tomorrow's Builders- An Employment Equity Guide for the Construction Industry,* and *Building for Equality - Practical Tips on Equitable Employment Procedures.* Ottawa: Canadian Construction Association.

  Extremely useful and effective strategies and tips for construction women, employers, and unions.

Chapter 1 - Introduction; Chapter 2 -Getting Into the Labour Force; Chapter 3 - In the Labour Force and Chapter 6 - Women with Disabilities provide excellent definitions, information, analysis and background for understanding and dealing with barriers created by an impairment which may have led to a disability which may be seen as a handicap depending upon the environmental context and willingness to accommodate. It examines the current economic effects of those circumstances on people with disabilities in Canada.

- Moore, Marat. *Women In the Mines: Stories of Life and Work.* New York: Twayne Publishers. 1996.
- Rexe, Deanna; Marcia Braundy et al. *Equity in Apprenticeship Resource Kit.* Victoria: Province of British Columbia, Ministry of Labour, Apprenticeship Branch, 1996. Distributed by the Open Learning Agency, Ph: 1-800-663-1653.

  This resource has a very good section on the barriers that are faced by each of a variety of groups [women, visible minorities, aboriginal people and people with disabilities] and outlines what a number of Canadian provinces are doing to address them. There is a section on effective program initiatives, public and private sector, in both the US and Canada. It also contains over 100 pages of annotated policy, program, and a/v and print resources for employment counselling, apprenticeship, exploratory course, role modelling and career exploration for youth, creating an equitable classroom and curriculum, and employment equity.

- Ferguson, Mary. *Welcoming Women into Trades, Technology, Operations and Blue Collar Work - A Checklist of Strategies.* 10 Douglas Court suite 2, London, Ontario: WITT National Network, 1995. Ph: (519) 453-2105 Fax: (519) 453-2087

  A self-diagnostic tool for employers, unions, women's groups and individuals to use in assessing the capacity of a school or business to effectively integrate women from all of the designated groups. Sample strategies being used across the Canada are described, and questions highlight the potential for growth and change.

- *Equity Resource Guide - 1995.* Ontario: Georgian College.

  A user-friendly resource guide to both US and Canadian print and audio-visual materials on cultural and institutional diversity.

- *Disabled Forestry Workers Foundation of Canada.* National Institute of Disability Management and Research. Founded and supported by the Disabled Forestry Workers Foundation of Canada. Working in partnership with North Island College, Port Alberni, British Columbia.
- *The Emerging Workforce Catalogue.* Winnipeg: Canadian Council on Rehabilitation and Work. Ph: (204) 942-4862 or TDD Ph: (204) 944-0341 Fax: (204) 944-0753. Toronto Office. Voice/TDD (416) 974-5575 Fax: (416) 974-5577. Calgary Office Voice/TDD (404) 226-3490 Fax (404) 266-3540
- Ferguson, Trudi C. with Madeline Sharples. *Blue Collar Women - Trailblazing Women Take On Men-Only Jobs.* New Horizon Press. 1994

  This book investigates the secrets of women in TTO: how they get along, and how they live their lives

- Goldberg, Joan Rachel. "*High-Tech Career Strategies for Women*". New York: Collier Books, 1984.

  An excellent do-it-yourself or resource book for instructors. Covers review of recent research on issues of women's ability in these areas, exploration of technophobia, what and where the jobs are, how to get your foot in the door, moving and advancing, and entrepreneurship for women. Useful in many aspects of this course. Encourage your library to buy a copy.

- Goldberg, Sharon R. "*Women in Construction - A Report on Access, Training and Retention in the Construction Trades*". October 1992. Vancouver: The Amalgamated Construction Association of B.C. Jointly funded by Employment and Immigration Canada.

  In depth examination of issues and solutions to integrating women into the construction workforce.

RESOURCES CONT.

- Green, Daina and Jill Jones. *Constructing Change: Dealing with Equity Issues.* Provincial Building and Construction Trades Council of Ontario - 15 Gervais Drive, Toronto, Ontario. Ph: (416) 449-4830. 1995.

  This manual provides curriculum material to teach apprentices and those in construction unions about equity in the workplace. Issues include dealing with sexual harassment, employment equity, communicating in a diverse workplace, and why equity is a union issue. Trainers will find tools to analyze and remove bias from existing training programs. This manual was developed by and for use in the construction industry, but its modularized approach makes it useful for many apprenticeship, workplace, and union trainers.

- Laurence, Karen Weiner and Elaine Cooper. *Take Two: A Woman's Guide to Technical Jobs in the Film and Television Industry.* Toronto: Toronto Women In Film & Television. 1993 0-9695351-4-7. Ph: (416) 322-3430.

- *Equal Billing: Implementing Gender Equity in the Film and Television Industry.* Toronto Women in Film & television. Toronto. 1992. Ph: (416) 322-3430.

- Ontario Metis and Aboriginal Association, & Ontario Women's Directorate. *Employment Equity for Aboriginal Women.* Toronto: Ontario Ministry of Citizenship 1993.

- OWD and Sentinel Paving and Construction Limited. *Equity at Work: Women in Road Paving.* Toronto: OWD

- Scane, Joyce, Pat Staton & Margaret Schneider. *Strategies that Work - Women in Trades, Technology and Applied Science.* Toronto: Green Dragon Press, 1994. Ph: (416) 360-6006

  An in-depth description of education and industry programs and personal strategies to integrate women into a wide range of technical skills. Strong personal interviews. Looks at issues for young women, African/Canadian women and inventors as well as gender sensitivity training and Women's Access initiatives.

- "*Winning with Women in Trades, Technology, Science and Engineering*". The National Advisory Board on Science and Technology. Ottawa: Industry Canada, 1993.

  Background information and very specific recommendations which identify all the constituencies with "change agent" responsibility to implement them. It also has a useful glossary and acronym list. Short overview of learning styles.

- Minty, Mildred. *Blinkers - A Workshop to Explore the Diversity in Trades Training.* St. John's, Newfoundland: Industrial Training Division, Dept. of Education. 1993.

  A wealth of exercises and background material on the issues delivered to trades instructors and ministry personnel. Solid barriers section.

- Schroedel, Jean Reith. *Alone in the Crowd - Women in the Trades Tell Their Stories.* Philadelphia, Penn.: Temple University Press, 1985.

  Under such headings as Feminism, Occupational Health and Safety, Family, Race, and Union, women tell the stories of their experiences training and working in the trades. One of the very few books on this subject where women tell their own stories. Inspiring.

- *Tapping Our Potential - Technicians & Technologist of Tomorrow.* Ottawa: Canadian Labour Market and Productivity Centre (CLMPC). 1993.

  Findings and recommendations in this report were supported by data gathered through three separate subcommittees: Participation of Women; Education; Competitiveness.

- *Tools for Change: A Curriculum About Women and Work.* Burnaby, B.C.: Women's Skill Development Society. 4340 Carson St., 1982. (This book may be out of print at press time, but if it can be found in local or college libraries, it is rich with excellent material.)

- WITT National Network. *The Recruitment Guide: How to Recruit Women Into Trades, Technology, Operations and Blue-Collar Work and Training.* London, WITT National Network, 1995.
  Ph: (519) 453-2105 Fax: (519) 453-2087

- *Breaking New Ground: Worksite 2000.* Chicago: Chicago Women In Trades, 1992. To order: send $5.00 US funds to Chicago Women in Trade, 37 Ashland, Chicago, Illinois 60607

  This report documents the first quantitative research on the working conditions for women in the skilled trades and makes clear the conditions tradeswomen face. Tradeswomen describe discrimination in hiring, layoffs, training and in treatment by unions. They tell of hostile work environments and isolation from other women. They relate almost routine incidents of harassment, ranging from unwelcome sexual remarks to sexual assault. Racism presents an additional burden for women of colour. Conflicts between work and family also present problems for tradeswomen.

  Chicago WIT learned that women can cope with these conditions and that women can be very successful in spite of hostile environment. However, Chicago WIT believes that individual strategies for coping should not be necessary, and that success or failure should be based on a woman's ability to do the work, not on her ability to cope. Working conditions must change.

  To facilitate this change, Chicago Women In Trades proposes WORKSITE 2000, a vision of a construction industry which has increased numbers of women who are treated equitably on the job. WORKSITE 2000 offers recommendations for all sectors of the construction industry.

- *Working Together* (Revised Edition). Raincoat Book Distribution 8680 Cambie Street, Vancouver, British Columbia V6P 6M9
  Ph: (604) 323-7100 Fax: (604) 323-7109
  ISBN 1-56052-262-5

  A unique workbook that deals specifically with multicultural awareness.

- Riddle, Dorothy. Illus. by Valerie Ward. *"Working Together - A Tool Kit for Diversifying Our Work Force.* Ottawa: Human Resources Development Canada. 1995.

  Developed to assist equity client groups with strategies and practical tools to overcome employment barriers. Divided into three sections - Diversity, Committing to Work Force Diversity, and Resources Available the kit provides material that you can apply to many diverse situations.

  See the "Deal Effectively with Harassment" unit for further study on this topic.

Films & Videos

- *A Good Job For A Woman - Aviation and A Good Job for a Woman - Engineering.* VHS. 25 min. each. Order from T.H.A. Media Distributors Ltd. Vancouver, BC V6E 2S9
  Ph: (604) 687-4215 Toll Free 1-800-661-4919
  Fax: (604) 688-8349

  Explores a number of careers in Aviation and Engineering.

- *Choosing The Beat of Her Own Drum.* VHS, 15 min. Regina: Live Wire Video Productions. 1995. Ph: (306) 586-3492. Comes with an Educator's Kit.

  Features four First Nations and Metis women pursuing careers in trades, technology, operations and science. It illustrates the satisfaction, enthusiasm and pride these women have in their work, their independence and their commitment to community and family. Acknowledgement and appropriate use of Indian and Metis history and culture are an integral part of the Kit.

- *To Live in My House.* VHS. 50 min. Victoria: HJF Productions. 1996. Distributed by Kinetic Inc.

  A superb film documenting the experience renovating a 5-story Victorian building in downtown Victoria, British Columbia: training women, who had been living on the street, to develop construction skills while building a beautiful emergency shelter.

- *Breaking Through.* 16 mm film/VHS video, 27 minutes. Produced by The Women's Workshop: London, Ontario, 1981. Available through HRD and in BC: AEMAC.

RESOURCES CONT.

A well-done professional film of the experiences of learners in a Women in Trades and Technology course. It is a powerful and moving description of women overcoming many of the internal barriers they can encounter in pursuing these areas.

- *Moving Mountains.* 16 mm film/video, 30 minutes, Skyworks, 1980. Available through the NFB.

  Women who have won the right to work on blasting crews, driving bulldozers, loaders, and 40-tonne trucks, talk about what it is like to work in the open-pit coal mines in Southeastern British Columbia. An inspiring film.

- *Women Inventors.* video, 15 minutes, Montreal: New Film Group/Morag Productions, 1988.
  Women Inventors Project
  Ph: (416) 243-5112

  Portrays the experience of women inventors talking about their inventions, and the need for business, marketing and entrepreneurial skills.

- *Playing it Straight.* VHS 15 min. Edmonton: Alberta Employment Services for the Physically Disabled. 1992. Magic Lantern Communications Ltd. (West) 1-800-263-1818;
  (East) 1-800-263-1717.

  This video deals with employment issues and persons with disabilities.

- *What About You.* video, 19 minutes, Ottawa: Labour Canada, 1991. Available through your local Human Resource Development Centre.

  Six women working in trades, technical and operational (TTO) careers, ranging from engineering to television producing, talk about their work and the benefits and challenges they have encountered. By sharing their experiences they act as role models for other women, encouraging them to believe in their dreams and to work for them with persistence and determination.

- *What Happens to Women in Tradesland?*
  Kootenay WITT, R.R. # 1, Winlaw, B.C. V0G 2J0
  Fax: (250) 226-7954. email: kootwitt@netidea.com
  Slide/Tape and Video format. 16 minutes. 1983. Available at many colleges, Women's Directorates/Secretariats, etc.

  "This informative and concise presentation covers a wide range of problems for women in the trades. Slides, drawings, and archival photographs are nicely balanced with music and narration by both a man and a woman....identifies myths many men have about women in the trades, and provides reasons for breaking down stereotypes and overcoming obstacles" (Catalyst Media Review). Comes with an extensive discussion guide and updated resource material for handouts.

- *A Little Elbow Room Please.* Workshop and video, 22.5 minutes, Ottawa, HRD Employment Equity Branch, 1993. Catalogue # LM-236-02-93.
  Ph: (819) 953-7413. Available through your local Human Resource Development Centre.

  The video is used with the manual which is divided into three sections: 1) Considering a trades/technical career, 2) Transferability of skills and strengths, and 3) Overcoming barriers to trades, technical and operational work.

- Ontario Women Employment Equity: *Not Just A Foot In The Door.* VHS. Toronto: OWD with the Ontario Federation of Labour. With leaders' guide. Available from the Ontario Federation of Labour for $25.00 plus GST by calling Ph: (416) 441-2731. Available with closed captioning.

  Developed to promote employment equity within the labour movement. Presents the stories and experiences of a number of people who have been denied employment or opportunities for advancement as well as people who have benefitted from employment equity initiatives.

- *Sisters & Brothers: Working Together.* VHS 16 minutes. Toronto: United Steelworkers/ Ontario Women's Directorate, 1992. Available from the United Steelworkers of America - 234 Eglinton Avenue, E. Toronto, Ontario Ph: (416) 487-1571 or locals.

  This video features Stephen Lewis, former Canadian Ambassador to the United Nations, speaking to union leaders on employment equity, society's historic discrimination against women and minorities, sexual harassment, balancing paid work and family responsibilities and the need to remove barriers that prevent the full participation of women. Includes user's guide to support discussion and to promote positive action.

- *She's Got Her Ticket.* Saskatchewan Women in Trades and Technology and Live Wire Video Productions. VHS. 9 min. 1994. Distributed by Live Wire Productions.
  Ph: (306) 586-3492.

- *Backlash to Equity: First Nations People Speak Out.* VHS & Handbook, 33 minutes. London: University of Western Ontario.
  Ph: (519) 661-3334. 1995.

  Developed to explore current opposition and resistance to equity initiatives being experienced in post-secondary institutions and the community-at-large.

- *The Chilly Climate for Women in Colleges and Universities.* VHS 28 minutes. Kem Murch Productions, 1991. Facilitator's Manual: Joyce, Susannah and the University of Western Ontario. Available from: Department of Equity Services, 295 Stevenson Lawson Building, The University of Western Ontario, London, Ontario N6A 5B8. Ph: (519) 661-3334, and through many college libraries and resource centres.

Resource List for Facilitator's Reference

The following is a reference list compiled from a large number of workshops using the slide show/video: "*What Happens to Women In Tradesland*". It is not necessary that participants name each barrier or attraction on the list; time and the facilitator's inclination will determine the length of emphasis placed on these questions in the discussion guide. We have placed a star next to those issues that it is more essential to note, and this may sometimes require prompting on the part of the facilitator.

Attractions

- higher wages*
- fascination with mechanical world*
- tangible accomplishments*
- challenge of new field
- challenge of being a pioneer
- health and well-being*
- doing physical work*
- often out of doors
- security of union
- greater status and respect*
- camaraderie of a crew*
- learning practical things*
- love of the type of work
- union of brain and muscle*
- variety of kinds and places of work
- mobility of skill*
- independence*
- informal clothing
- physical development
- mastering difficult skills*

Barriers

- pioneer - few charted courses*
- outsider - woman in a man's territory*
- reception often hostile and confusing*
- child care*
- difficulty in getting into training
- employer resistance*
- lack of networks and contacts in these fields*
- prejudice - people tend to think of the jobs as men's work
- perception that women can't do the same kinds of jobs as men*
- preconceived notion that women lack strength and endurance*
- preconceived notion that they need special facilities*
- preconceived notion that women only work until they get married
- many women are socially programmed with low self esteem and low self-confidence
- pressure to succeed "for all women"
- isolation*
- conspicuousness

- lack of support from: family, friends, co-workers, instructors, counsellors*
- lack of financial support*
- language: tool, male terminology, expressions of anger, swearing, etc.
- harassment: both sexual and gender*
- employer's reluctance and shyness in dealing with issues of harassment*
- women lack bluffing skills and are often afraid of making mistakes
- lack of opportunity for background/development in mechanical skills*
- attitudes of working world that women can't/ shouldn't, are weird if they want to*

It is useful to break the participants into smaller groups and have each group work on ways of resolving a different set of barriers from the list, and report back to the large group. This way, more creative time can be spent on each issue, and most of the list can be covered.

Ensuring that trades and technical women (role models) are present to speak to these issues from real experience can be vital to a truly productive discussion.

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"Women in a Man's Territory: The Sexuality of the [TTO] Workplace"[23]

by **Kate Braid**

Introduction

For hundreds of years, with a brief interlude during the World Wars, trades and blue collar work have been almost exclusively a male preserve, a 'men's only' club where men could create the kind of atmosphere and establish the kind of relationships with which they felt most comfortable and from which women were almost universally excluded.

One notable exception is the fishing industry in which wives and daughters often worked alongside their men. However, paralleling this fact is the simultaneous and deep superstition of the 'bad luck' associated with women on boats. Some men fish with women. Others will not let even their wives step on board for fear her presence will cause tangled nets, broken traps and disappearing fish runs. In general, then, women have stayed at home. The men went out to work together.

This article begins to explore what happens when a woman works in blue collar jobs that are the traditional territory of men. It began with my own experience as a lumber piler, construction labourer and currently, carpenter's apprentice. But it is primarily based on in-depth interviews with 23 women in [trades, technical and operational (TTO)] jobs in BC, the Yukon and Ontario who work as labourers, carpenters, a deckhand, fish boat operator, truck and fork-lift driver, lumber grader, repairwoman, mill operator and maintenance engineer. These interviews, in addition to others with Canada Employment personnel, employers and union officials, were conducted in the course of research for a Master's thesis for Simon Fraser University ("Invisible Women: Women in Non-Traditional Occupations in BC Department of Communication", 1979). They have been followed up with numerous personal conversations with tradeswomen in the Women in Trades Association of BC and at the first National Conference of Women in Trades in Winnipeg in September, 1980.

The article begins from Millman and Kanter's point that when men look at a gathering of men, they think they are observing a sexually neutral or sexless world rather than a masculine world. It aims to show the intensely sexual attitudes and behaviour manifested in any all-male or predominantly male workplace and to explore the effects of such a work environment on women's sexuality. It concludes with observations on the contradictions evoked between women's experience of themselves as female and their socialization as feminine.

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[23] This article originally appeared in Canadian Woman Studies / les cahiers de la femme (Winter 1981). It is used with their permission as well as the author's.

The Male Territory—The Sexualization of the Workplace

Womanland

Beware our small shadow as it scurries across your glories…
We are the ones who have never learned to keep our hands off things
We are the creatures you have no pact with come to betray you
Peter Trower, Logger, 1978
Northflight Over Wilderness

There is a common social assumption that a gathering made up entirely of men is sexless. Any woman who seeks a [TTO] occupation is therefore generally unprepared for the intensity of the male flavour of the workplace when she enters it for the first time. While she naively expected that her main concern would be the work, she finds instead that a major portion of her energies must be spent dealing with the effects of a strong male community whose members have come, to a large extent, to define themselves in terms of what they all, regardless of race or other defining characteristics, are most conspicuously not—that is, female. The fact of the presence of a woman—a solitary woman especially—increases the men's consciousness of themselves as men. They will often then seek to preserve their commonality by keeping the woman, the token, on the outside. "We worked together really well," one woman typically commented, "but I always sort of felt on the outside."

One of the primary means by which male sexualization of the workplace is revealed and maintained is in language: sexual terminology, swearing and talk about women.

Women interviewed clearly felt that they stood outside the boundaries of the masculine work world. "I wasn't really welcome," observed one labourer. A fork-lift driver concurred. "They couldn't piss in the U-drains anymore, they cut down their swearing—they just didn't like women around them."

Being the only woman on a crew of men thus becomes somewhat like being a double agent. You are with the boys but not one of them at the same time as you are one of the girls but (with so few women yet in trades) not with them.

First, the terminology

One of the primary means by which male sexualization of the workplace is revealed and maintained is in language: sexual terminology, swearing and talk about women.

Long before the most recent influx of women, the industrial and crafts workplace was humming with sexual terminology and sexual reference. There are 'male' and 'female' and even 'lesbian' (female-female) connections; boards are 'dressed' or 'undressed'; something to be moved a fraction goes 'a cunt hair' right or left; there are 'studs', 'screws', 'nuts', 'wires' to be pulled and 'erections'; any small projection is a 'tit' or 'nipple'; and virtually every machine, tool and object is referred to in the feminine as 'she'. "Lay 'er down" or "You've got 'er!" one carpenter will call to another when a board is in position. Sexual overtones are often overt. Once when I asked a labourer for some studs to finishframing a wall, he replied, "Will I do?" Men often tease each other about their tools (especially those that are longer than they are wide, such as hammers) as an extension of their sexuality—hence the bigger and the more powerful, the better. An electrician reported that after five years on the job, men still stopped to watch every time she used a power tool. "It's partly that it's somewhat sexual and partly that women aren't supposed to be able to handle anything associated with power," she said. It's interesting to note that while the tool is associated closely with his own body, the objects upon which a man works are associated with the female. One carpenter informed me that the slang term 'cunt' was originally the name for the slit in a carpenter's leather apron where he kept his hammer. A search in the *Oxford English Dictionary* failed to verify this information. The dictionary fails to give any definition for 'cunt' and refers the reader to 'cunye', another slang reference to the female genitals whose original meaning is clearly rooted in the trades. Its 11th century use meant 'cornerstone', perhaps a colloquial reference to the location of the 'cunye' in the angle formed by a women's legs. At any rate, the association of female sexuality with the trades seems clear.

The subtlety of sexual references can leave women feeling paranoid and over sensitive unless they are confirmed. Once a group of us, 40 men and two women, were being instructed on the use of a Hilti gun, a powder activated tool that shoots nails into concrete and metal. I sat feeling increasingly uncomfortable as the instructor spoke of the 'depth of penetration', 'oiling your tool' and 'sending it all the way in' until one young man burst out in a stage whisper, "It's really sexy, isn't it!" Everyone furiously scribbled notes but I was relieved to have my perception confirmed.

What is disturbing for a woman in [TTO] work is that in fact there are many sensual aspects to tradeswork. For most women the sense of physical well being and physical satisfaction inherent in their work is one of its chief rewards. "I like the physical part," they said. "It feels tremendous." "My body changed an awful lot. I got stronger. I toned up and I found that I felt better." Many commented that physical work was at times 'sensuous' and 'a meditation'. "Once you got over the hurting part," a lumber piler said, "and set up a rhythm of work for yourself, it was almost peaceful and calming. Your body felt very graceful." Women found themselves in the contradictory position of being more aware of their bodies, of having a particularly physical and enjoyable side to their work at the same time as they had to suppress any reminders of themselves as sexual females in a masculine environment where they already felt far too conspicuous and where they often felt uncomfortable with the way many men expressed the sensual aspects of the work.

Second—the swearing

The second way in which the sexualization of the workplace is expressed is through swearing. Women universally reported that men are uncomfortable about their language but swearing in particular makes them uneasy when there is a woman around. As a male millwright commented, "A guy has two languages, right? One I use in public and the other I use with the guys in the mill—f...this and f...that." Some women reported that when they started work, all conversation in their presence stopped entirely. " The lunchroom was quiet for two weeks, no one would talk or cuss or anything," a repairwoman remembered.

Women are aware that they are intruders who are defined sexually as 'ladies' and they recognize that it is important to deny the lady-like association. "They say they watch their language because I'm a woman," a repairwoman reported, "I wish they wouldn't."

After a few weeks, the men might feel more at ease about talking but they often remained uncomfortable about swearing. "They'd make a big deal about it," a labourer said. "Everytime I came onto a new crew I could tell they changed their language for me by how they spoke to each other when they didn't know I was around," added a carpenter.

In other situations, men will exaggerate their swearing presumably to get a response. "My first week," a pulp and paper mill operator reported, "I lived in a blue cloud of burping, farting and swearing while they tried to gross me out." On one crew where I worked, one man even made a point of standing very near me and swearing long and loudly. Then just as loudly he would 'apologize' saying in an exaggerated fashion, "Oops, pardon me. I didn't notice there's a lady present!" When others swore he would come over and say, "Isn't it revolting?" or "You couldn't be a lady after hearing all this language."

Women are aware that they are intruders who are defined sexually as 'ladies' and they recognize that it is important to deny the lady-like association. "They say they watch their language because I'm a woman," a repairwoman reported, "I wish they wouldn't." One woman, a mechanic, made it explicit why she did not want this tender treatment. "If someone said, 'Sorry,' I'd say, 'Well, fuck man if you're going to swear, do it properly. You want some lessons?' or something like that. I guess that was part of my defiance, my machoness against theirs. If I was to say, 'Oh, that's all right' to his

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'Sorry, lady,' that would be playing to his game of ladies and I don't want to do that. I'd rather swear back and he can either feel uncomfortable or comfortable with that."

Most women took a more conciliatory position. "It's a real buddy system on a crew," a carpenter emphasized, "and that's why, as much as you possibly can, you've really got to forget about the sex part, that it's a male and female relationship. Most of the men are not used to working with women. They've always worked with men and they'd like to be able to swear and say anything they want to. I can accept that."

In fact, during the course of their integration into the workplace, women often take up swearing themselves, sometimes with gusto, as an excellent outlet for frustrations. "I used to get so damn mad that it was a release for my temper," a fork-lift driver said. "The louder and harder I could swear, the better it felt." And an mechanic explained that "My biggest problem after I got into cussing was slowing it down. Someone was interviewing me and he said something about "Do you mind the swearing?" and one of the guys hollered over and said, "We don't mind when she swears!" I probably swore more than anybody in that shop."

The contradiction in women's acceptance of men's swearing and adopting it themselves was that the men often felt that the women shouldn't swear. Women were asked to "watch their language" and asked outright not to swear in the presence of certain men. One male carpenter reported in some outrage to his fellows after overhearing two women at work that "They use the big F!"

Third—the talk about women

The third way in which the sexualization of the workplace is expressed is the men simply talk about women when they are together on the job in such a way that no flesh and blood woman would recognize herself in the image that is thus collectively produced. "We talked about women 90 percent of the time," a male smelter worker said. "But women were never there. It was pretty shocking when the first woman came onto the site. There's a difference between the way you usually talk about women and the woman who is actually standing there."

Although most men working in crafts and industry do not own the objects they produce, they have tremendous effect on the industrial process by the fact that their labour exerted upon raw materials produces a final product with commercial value. In process of doing so, and over hundreds of years of male working companionship in which they have referred to the objects handled and the tools used with specifically sexual terminology and intent, men have come to characterize their workplace as feminine and have assumed toward it an attitude of sexual superordination and control.

It becomes apparent that a man's language on the job has come to represent more than just a convenient way of talking to the guys. It also represents a very clear and shared way of behaviour. All day a man treats objects as women, literally cutting and bending them to his will. It is therefore no surprise that he assumes to continue this act of control when he goes home, and treats women as objects. The 'mans world' of authority over objects all day is simply and rationally extended to women and children when the man goes home at night.

Of course this is a generalization to which there are many individual exceptions. But the hypothesis remains that we are dehumanized and objectified as women by the fact that we are associated with the literal objects (wood, fish, ore, etc.) that men handle at work. And it may be men's shared sense of domination—over objects at work; women at home—both in and out of the workplace, which reinforces their sense of 'right'.

"We talked about women 90 percent of the time," a male smelter worker said. "But women were never there. It was pretty shocking when the first woman came onto the site. There's a difference between the way you usually talk about women and the woman who is actually standing there."

Men's discomfort with women on the job stems from two main roots. The first is the disjuncture between the idea or expectation of woman generated by the men's talk (no doubt fed by the media's and other institution's images of what a 'lady' is, does, looks and smells like) and the actual women herself. That is, from the conflict between a man's assumptions that 'ladies can't do this work' and the evidence of his senses that in fact they can and are doing it.

The second is the presence of a woman disrupts and destroys the exclusively male-defined sexual nature of the workplace.

The romance of back-slapping workers sharing sexual innuendoes is not available to women. It is our very exclusion, the fact that we as a sexual class of women are its object, that helps define the camaraderie of the men's relationship. This is not case of a common shared perspective that continually reinforces this attitude. The effects, however, are devastating to women entering [TTO] occupations, particularly at the pioneer stage when there are still so few of them. The fact that this work is touted as 'man's work' is clearly a specifically sexual boast and the [TTO] workplace is a specifically male sexual territory.

The Women

Tradition tells us how we should act and feel about ourselves as 'feminine' women. But most of these traditional behaviours extolling the attractiveness of passivity, dependence, gentleness, physical weakness and so on, specifically exclude many of the qualities which women in [TTO] work begin to acquire such as confidence, assertiveness, physical strength, competence, responsibility for self and mechanical skill.

It is no surprise that many women in [trades, technical and operational] occupations experience contradiction and conflict between how they are and what they do and social expectations of how they should be and what they ought to do. "When I turned 14 and the time came to stop being a tomboy and put on a skirt," as one put it, "I couldn't do it." Our socialization as tomboys and then as grown women has been incomplete. "I always liked wearing jeans and a T-shirt," apologized a pulp and paper worker. "A lot of people don't consider me that feminine anyway."

These women have put themselves into a new social situation, a play in which they have not yet learned their lines, in which in fact the 'part' for a woman has not yet been written.

The fact that they do not 'fit in' can not play 'correctly' because there is as yet no socially evolved part for them to play, in turn threatens men in their self-esteem, on their convincing quality of their sense of themselves as men doing what [only?] men can do. It may be that many men don't so much resent the individual women on the job so much as they resent the need to change. Women's challenge to their traditional role demands that men re-evaluate theirs as well. Maybe this explains why the pressures on a job often focus on simplifying, reducing the woman and all her responses to what men could safely call 'feminine'. That way, perhaps, the women could be made predictable, explicable, "Why would a woman want a job like this?" is a very common question addressed to the woman on the job. Some men wait for, expect and are quick to pick up any action that shows physical weakness or disability on the woman's part. This reduction of behaviours is a danger because it does not allow a woman to find a synthesis, to be both powerful and feminine. If women allowed it they would fail at a job because, by *definition*, any feminine woman, and lady, must fail. After all, as someone will always remind you "This is a *man's* work."

So exactly how is the traditional feminine role being challenged? How do these women go about writing a new script for themselves and each other?

There is a common sense of confusion about their sense of themselves as women, as females and as feminine. All of these words are in the slow process of being redefined in the course of women's evolving behaviours. Many women who begin [trades and technical] work do it with their traditional sense of what is appropriately feminine, largely intact. When I started working I wore eye makeup," a blaster remembered, "I'd wash and curl my hair every night so I used to look fairly nice." Another woman noted that, "For the first couple of years I worried about what to wear to work." A labourer burst out laughing when asked what had changed for her at work. "Are you ready? I washed my rain-gear every night! I couldn't stand being dirty. I'd come out every day in my fresh rain-gear, bright yellow like a canary." And now? "Now I don't give a damn. Things like that become unimportant after a while."

Women spoke of 'losing their identity', assuming that not to be feminine was to be masculine, "In the beginning you tried to keep your identity, your 'being a woman', right?" asked a mine mill operator. "I did, anyway, I tried wearing shirts under my coveralls just so that I wouldn't become too masculine. Some accepted what they felt was an inevitable eroding of their femininity. As one labourer explained, "At first I really enjoyed construction but after a while trying to be clean was a big problem. I had grease underneath everything and you get muscular. I feel like I'm not a woman anymore."

I approached the job with the idea that I would be silent and just watch for a few days until I got the feel of things. I thought I was being smart in those first few days of silence. In fact, what became obvious over the course of several weeks in which my silence did not end, even under extreme provocation, was that I did not seem able to break it.

It was not always clear if this was considered an advantage or not. "Being feminine is when a guy can look after you," a labourer began, and in the next breath protested, "but now I can look after myself."

My own experience is that certain traditionally feminine behaviours are a strong liability for a woman in a [TTO] occupation. This was most conspicuous when I started work on a large framing crew where there had been resistance to hiring me in the first place, where I was uncertain of my skills or of how I would perform in the high pressure work that is framing. What was most shocking to me was not so much their behaviour as my own. I approached the job with the idea that I would be silent and just watch for a few days until I got the feel of things. I thought I was being smart in those first few days of silence. In fact, what became obvious over the course of several weeks in which my silence did not end, even under extreme provocation,

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was that I did not seem able to break it. My response to their aggressive language and behaviour was to assume an entirely 'feminine' silence and passiveness.

As a feminist, I had spent years learning to break my inappropriate silences, learning how my passivity was a learned response that male authorities rewarded as the most 'appropriate' for a woman—and the most convenient for them. I had become increasingly proud of my outspokenness and my anger.

Yet, here I was, keeping my mouth shut when inwardly I was screaming. At a woman's meeting I could roar, sweat pouring off my forehead, pounding a pillow until my fists hurt, "If you touch me again I'll rip your bloody balls off," and on the job saying mildly, quietly to the man's face, "Don't do that again." I might have said please.

Buried deep in my 'feminized' self was a part of me that first learned, long ago, what a woman does when she is under attack. I can clearly remember nights at the dinner table when my father mocked my mother until she said less and less, becoming a veritable pillar of concentrated power, sucked in, held together with incredible will, saying nothing. By her silence we knew her anger. She said it most effectively with silence, I guess, because silence must be most effective. I was her daughter and I learned silence from my mother, as she had learned it from hers, as dutifully as I learned that I could also be brave and cross the tracks.

When I dived into the reasons behind my immense difficulty in speaking out at the violence done to me on the job, I quickly found my mother, or more accurately, I found the social mores my mother, as a 'good' mother, had taught me, that 'nice girls' do not yell and scream and protest, especially when they are angry.

In order to survive on the [TTO] worksite, women are learning to say goodbye to some of the ways they learned of dealing with the world, as girls, that are inappropriate in the new context of [TTO] work.

Other women felt more at ease with their changes than I. "I'm not sure what being 'feminine' is," a carpenter stated, "but it's not important to me as much anymore. It's more important to me to find out who I really am, what sort of real strengths or weaknesses I have as a person."

Women begin to recognize their identity as formed by their acts, not in their passivity or in their physical appearance. "I'd say my idea of what is 'feminine' has changed," declared a mine mill operator. "In the beginning I fought to keep it, thinking I was going to lose it. Then I realized these were just physical things, so I slowly did away with them as I matured. I'm still a woman even though I don't buy slinky clothes. I'm still a woman even though I'm doing what is considered a man's job. Feminine, is just the difference," said another.

These women are struggling to understand that difference in the context of the [trades or technical] worksite, to find a comfortable way of living that 'difference' that is comfortable, desirable and appropriate for them. "I wouldn't be working here if I was all that feminine," as one driver put it, is exactly the point. Women in [TTO] working situations must wear steel-toed boots and strong, practical working clothes. They become assertive, strong and competent—all traditionally 'masculine' characteristics— because those characteristics are most appropriate to that work. It becomes clear that the structure of the work situation and the severe restrictions that have been placed on men and women in the past in terms of what is appropriate work for them, may have had much more of an effect on what we call our 'femininity' and 'masculinity' than we have recognized. It begins to be clear, as women enter [TTO] occupations, that the structures of the work situation, not simply the personality of the women, have a major impact on behaviour.

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Assumptions About Women in the Labour Force[24]

Assumptions: Group A

1. Women are taking jobs away from men.
2. Women lack determination and motivation.
3. Women lack physical strength and endurance.
4. Working mothers cause juvenile delinquency.

Assumptions: Group B

1. Women only work for extras.
2. Women will not be able to cope with hidden barriers such as teasing and prejudice.
3. Women will have more accidents because the tools and safety equipment they use are designed for men.
4. When I say "he" or "him," of course I mean women, too.

Assumptions: Group C

1. Women are not as reliable as men—they are sick more often.
2. Women are not interested in trades or technical work.
3. Women are better suited for some jobs—they have greater dexterity, are more tolerant of repetition, and pay more attention to details.
4. Men will try to protect women from heavy work and give them cushy jobs, resulting in poor working relationships.

Assumptions: Group D

1. Women need special facilities—toilets and separate bunkhouses.
2. Women are not qualified and lack experience and technical knowledge.
3. Women are naturally passive, emotional, dependant, and indecisive. That's how they are made.
4. Women are unable to work shifts because they have children at home.

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[24] From the *Workplace in Transition — Integrating Women Effectively*. Used with permission from Kootenay Women in Trades and Technology

Deal Effectively with Harassment

LEARNING OUTCOME

Upon completion of this unit, learners will be able to demonstrate the ability to deal effectively with harassment in a variety of situations.

Specific Learning Objectives	Teaching/Assessment Strategies
• Define and describe gender harassment, racial harassment, and sexual harassment, and how they might be countered.	• Show the videos, *It's No Joke* and *Call Me Sister, Call Me Brother*, or *Sexual Harassment: Working It Out*. Compare and contrast the messages and suggestions for dealing with complaints. Using scenarios provided, role play a variety of responses. Debrief with questions: Did you achieve your objective? Was the reaction what you expected? How did you feel in making that response? Can you think of other behaviours that might achieve a different kind of reaction?
• Describe three sources of information on harassment and how to access them.	• Research the Internet for information related to sexual harassment in federal and provincial Human Rights legislation, occupational health and safety legislation, harassment policies, negotiated union contracts, civil legislation. Refer to the unit on Rights and Obligations for further resources and activities.
• Identify five types of activities that could constitute sexual harassment.	• Conduct a class discussion that explores the different kinds of harassment: personal, sexual, racial, gender, verbal, visual, physical and what motivates it. Focus on how harassment is often an inappropriate expression of power over another person. Use videos (see Resources) and the Handout on "Harassment" for background information.
• Examine why sexual harassment is an infrequently reported problem.	• Using *Sexual Shakedown: The Sexual Harassment of Women on the Job* and *Sexual Harassment: Working It Out*, discuss in class the feelings and implications involved with being the victim of harassment.
• Identify and describe a variety of legal avenues pertaining to harassment.	• Ask learners to, using information and ideas gathered through the research undertaken, develop a series of scenarios where differing avenues of action would be taken.

Specific Learning Objectives	Teaching/Assessment Strategies
• Practise strategies for dealing with harassment situations.	• Provide or elicit from learners sample problem situations. Form small groups. Distribute situations with Handout: Issues to be Addressed in Problem Solving. Practise developing strategies for dealing with problem situations. Remind groups that: 1) assertive skills are very important in approaching problems in these areas; 2) problems that are ignored tend to get progressively worse; 3) there are orderly steps and levels of approach to dealing constructively with each part of the problem.

147

RESOURCES

Books

- Aitkins, Fran. *Proceedings of the Western Regional Women in Trades and Technology Conference.* Parksville. South Island WITT, 1993. Fax: (250) 743-7796. ISBN 0-7726-2298-1.
- Aggarwal, Arjun P. *Sexual Harassment in the Workplace.* Butterworths, 1992. 2nd edition.
- Attenborough, Susan. *Sexual Harassment at Work.* Ottawa, Ontario: prepared for the National Union of Provincial Government Employees, 1981.

  This booklet is one of the most significant Canadian works on sexual harassment. It describes what it is, how it affects health, job performance, and security, and why it persists, and provides solutions both from a personal and a union point of view, as well as suggesting other avenues that could be taken.
- Backhouse, Constance and Leah Cohen. *The Secret Oppression: Sexual Harassment of Working Women.* Toronto: McMillan, 1978. Available in many public libraries.

  Published results of Canadian studies documenting women's experience on the job with sexual blackmail, job insecurities, humiliation and fear for safety, the elements of sexual harassment.
- Baxter, Betty, et al. Preventing Harassment in the Workplace. Vancouver: Learning Works. Ph: (604) 669-6757, Fax: (604) 669-5341.

  Excellent workshop materials and train-the-trainer materials.
- Bohnen, Elizabeth and Judy Klie. *Bridges to Equity—Program Manual and Participant's Workbook.* Toronto: City of Toronto, 1991. Attention: Resource and Publication Centre. Ph: (416) 392-7410 Fax: (416) 392-1553.

  Unit 10, Overcoming Workplace Barriers in both books deals extremely effectively with harassment issues, particularly for women working in TTO jobs. They contain solid background information and very useful exercises. The Participant's Workbook has some excellent workplace scenarios for use in developing and practising effective responses.
- Farley, Lin. *Sexual Shakedown: The Sexual Harassment of Women on the Job.* New York: McGraw Hill, 1978.

  This definitive work on sexual harassment coined the words. Presents background on the research and results of the first harassment studies done in the U.S.A., and provides insight, analysis, understanding, and avenues of action.
- Geller-Schwartz, Linda. *From Awareness to Action: Strategies to Stop Sexual Harassment in the Workplace.* Ottawa: Women's Bureau, Human Resources Development Canada, 1993. Ph: (819) 994-0453.

  An excellent compendium of views from a broad scope of contributors, covering the personal, legal, employer and union perspectives.
- *Taking Action: A Union Guide to Ending Violence Against Women.* Vancouver, BC Federation of Labour/Women's Research Centre, 1992. Bulk printings are available on a cost recovery basis from the BC Federation of Labour, Ph: (604) 430-1421; Women's Research Centre, 101-2245 West Broadway, Vancouver, BC V5G 1H1.

  A very useful and plain language tool that puts harassment in the context of violence against women. *Taking Action* goes deep, responsively exploring inequities and violence in our culture.
- Rifking, Lawrence and Loretta F. Harper. *Sexual Harassment in the Workplace: Men and Women in Labour.* Kendal Hunt, 1993.
- Tetrault, Jeanne, ed. *The Woman's Carpentry Book: Building Your Home from the Ground Up.* New York: Anchor Press/Doubleday, 1980.

  An excellent basic book on tool handling and building that also provides social analysis and suggestions for handling the new situations. See pp. 325-327 for resources on harassment.

RESOURCES CONT.

Films and videos

- *Taking Action.* 26 minutes, video 1/2 and 3/4", PetroCanada, 1987. Available for purchase from VICOM, 14713 - 116 Avenue, Edmonton, Alberta, T5M 3E8 or L.M. Media Marketing Ltd. Ph: (416) 475-3750.

  Peter Gzowski narrates this Canadian presentation on the subject of sexual harassment. Using scenes of men and women working together in trades and office environments, the video defines the problem and describes how to deal with it. In resolution of each problem, the principle of corporate responsibility is well portrayed.

- *Call Me Sister, Call Me Brother.* 20 minutes, video, poster, booklet. Toronto, Canadian Auto Workers Education Department.
  Ph: (416) 497-4110.

  Distributed throughout union locals with a clear message from the executive, this material educates union members on this issue and how to deal with it. It contains strong language and personal stories.

- *A Safer Place: Preventing Sexual Harassment and Sexual Assault at Work.* VHS, 25:51 min. City of Toronto, Training and Development Section. Ph: (416) 392-0133.

  Through dramatizations and candid discussions among victims of sexual harassment and sexual assault, this video delivers a strong message about personal and organizational consequences. The video offers clear, sensible recommendations to women as employees, and to managers about responding to and preventing sexual harassment and sexual assault at work. A manual for trainers and facilitators is provided for an additional cost.

- *Sexual Harassment: Working It Out.* VHS, 22 minutes. Ontario Federation of Labour.
  15 Gervais Drive, Toronto, Ontario, 1992.
  Ph: (416) 441-2731. This video is available with closed captioning.

  This video and presenter's manual were developed to promote strategies that combat sexual harassment in a unionized environment and help provide appropriate workplace responses to incidents of harassment.

- *Facing Harassment.* 14 minutes, video. Ottawa, Public Service Alliance of Canada.

  Shows several different kinds of harassment by co-workers, including harassment based on sex and sexual orientation as well as race, national origin, and disability. The film discusses how harassment erodes union solidarity and what actions unions are taking to deal with the issue.

- *It's No Joke: Sexual Harassment in the Workplace.* VHS. 24 minutes with Discussion Guide. Victoria: Friday Street Productions/Province of British Columbia. 1993. Approximately $30 for non-profit inside BC, $95 outside BC, $250 for corporations and businesses.
  Ph: (250) 380-6656 Fax: (250) 380-6670.

  International award winning video which uses dramatic vignettes based on actual harassment cases. It depicts both obvious and subtle forms of harassment, intercut with definitions and hosted discussion. Looks at legal responsibilities as well as what victims and co-workers can and should do.

- *Sexual Harassment in the Workplace.* VHS, 20 minutes. Ottawa: Labour Canada Women's Bureau, 1988. Available through many libraries and on loan from HRDC. Ph: (819) 994-2603; Fax: (819) 953-5482.

  This video explores sexual harassment through a series of vignettes and interviews. It outlines the responsibilities of federally regulated employers and the rights of employees under the *Canada Labour Code*, providing information on prevention and redress.

- What Happens to Women in Tradesland. with Discussion Guide and Resource Package. (See the Develop Strategies for Overcoming Societal Barriers unit for a review of this material.) Kootenay WITT; Ph: (250) 226-7624; Fax: (250) 226-7954.

  There is much effective material in the package to assist with this discussion, both questions and resource materials, as well as handouts.

Other

- Baxter, Betty, et al. *Preventing Harassment in the Workplace.*
- Green, Daina and Jill Jones. *Constructing Change: Dealing with Equity Issues.* Toronto: Provincial Building and Construction Trades Council of Ontario. 15 Gervais Drive, Toronto, Ontario, 1995. Ph: (416) 441-2731. (See "Recognize, Adapt and Influence Workplace Culture" unit for review.)
- *Harassment Awareness Resource Kit.* Ottawa: CUPE, 1991. available in French and English from CUPE Equal Opportunities Department. Ph: (613) 237-1590; Fax: (613) 237-5508.

  Many unions, Federations of Labour, and the Canadian Labour Congress have developed strong and clear policy statements, training considerations for local officers and stewards, bargaining goals, collective agreement language, and practices for dealing with both employer and co-worker harassment situations. This is one example. The United Steelworkers of America also have very good material. Contact your local Labour Council for other material.
- Provincial and federal Human Rights Councils and Commissions, and Women's Equality Directorates/Ministries and Labour Ministries often have an educating function, which may include speakers, and most often includes posters and pamphlets. Some Occupational Health and Safety Councils may also deal with this issue (See particularly the *Occupational Health and Safety Act 1993*, Part I Preliminary Matters—Saskatchewan). Check government information offices and the Internet.

HARASSMENT[25]

Harassment takes many forms. Sexual harassment is the most obvious, and often the most painful and insulting. But the general kind of harassment women get—just because someone thinks they don't belong there—can also undermine a woman's job performance. Harassment can be just as devastating in the form of isolating or excluding a worker from the camaraderie on the job.

Sometimes it is difficult to separate the razing one might get as an apprentice or a newcomer to the job site from the hazing some women receive when they are unwelcome on a job or are being tested to see what their limits are.

There is a fine line between bantering and harassment, and this line is different for every worker. Intent has a lot to do with it, and only the individual initiating the behaviour really knows what they mean by it. The rest of us have to guess, based on how we feel in response to the behaviour. As one instructor said at a Labour School course on advocacy training, "If you feel like you are being done to, you probably are!"

Harassment should not be confused with workplace romance, or flirtation. The distinction must be made between mutual attraction involving consenting adults, and actions that are of an unwanted or coercive nature.

Much harassment is an exhibition of power over another person, such as the instructor who insisted that a female student lift a battery weighing over 100 pounds, and place it on a high shelf. When she had the battery waist high, he told her to put it down, and he placed her on probation for not using the proper technique (which she had not yet been taught).

Whether the misuse of power takes the form of just plain intimidating behaviour or is directed in a sexual manner, it undermines the competence and comfort of the workers to whom it is directed. This undermining, in turn, affects the productivity of the whole crew or classroom.

Although harassment is occasionally defended with statements like "boys will be boys", such behaviour is not only unacceptable, it is also illegal.

Harassment has been defined in a variety of ways. The definitions usually include mention of unnecessary or unwanted touching or patting, suggestive remarks or other verbal abuse, leering at a person's body, demands for sexual favours, compromising invitations, and physical assault. Some definitions include the words, "any persistent (behaviour)"; others mention "under threat of reprisal".

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[25] This handout was developed by Kootenay WITT for use in The Workplace in Transition: Integrating Women Effectively seminar, and is used with permission.

Sexual harassment can also take less direct forms, such as the case of a woman who came to class every day to find drawings of female genitals on the blackboard labelled with her name, or the female worker who was subjected to a constant posturing of the common shop space with pornographic material. These actions, as well as the more direct confrontations, have the capacity to create tension, anger, fear, and intimidation of women workers. Often, the other male workers don't like it either. This is referred to in current Human Rights legislation as a "poisoned work environment."

There are also times when testing the mettle of the new workers will inevitably take place. It is the responsibility of instructors, job stewards, foremen and employers to ensure that such activities don't go beyond wholesome fun.

Most schools have conduct codes for students that are the responsibility of instructors to enforce. Some now have specific gender, sexual and racial harassment policies. Most industries have collective agreements and most unions have constitutions that comment on the respect required among fellow workers and between workers and management. Sexual harassment, specifically named, is being included in many of these agreements. Other legal recourse on these issues is available through Human Rights Officers in provincial governments as well as through union contracts. In the case of physical contact or dangerous mischief, there is always the option of action through the civil courts.

A clearly defined grievance and/or reporting procedure is essential to a healthy work environment. Workers or students should be advised of such procedures when they first come on site. Many educational institutions, employers and unions are now providing Harassment Officers to assist with this process. Support of this kind is a valuable asset to assist women in the feeling that there have a right to be there. Knowing there is somewhere to go with a problem goes a long way to helping workers cope on their own with everyday sorts of issues.

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Marcia Braundy
Kootenay Women in Trades & Technology

Produced for seminar: "The Workplace in Transition: Integrating Women Effectively"

Issues to be Addressed in Problem Solving[26]

1. What do you see happening here?
2. What is the root of the problem?
3. What are the responsibilities of the participants?
4. Who else has responsibility in the situation?
5. What are the possible avenues of action, and in what order?
6. What are the repercussions of each?
7. Which do you feel most comfortable in choosing?
8. Does there need to be follow-up? If so, what would it be?

153

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Survival Skills

UNITS

- Manage the Requirements of Home and Work
- Apply the Techniques of Stress Management
- Manage Childcare
- Develop and Practise Assertive Skills

KEY IDEAS

- **Our lives fill up with tasks and expectations of performance. We have the ability and the right to set our own limits as necessary.**
- **Time is a limited and valuable resource, and we control its use.**
- **A clearly outlined plan of action is an important tool.**
- **Understanding our finances assists us in managing them.**
- **Stress has a major impact on our physical and emotional well-being.**
- **Identifying the specific stress factors in our own lives provides a basis for developing successful coping strategies.**
- **Finding appropriate childcare facilities adds to employability.**
- **Assertiveness is an essential tool for succeeding in training and employment in trades and technology.**
- **Distinguishing between being able to act assertively, aggressively, or non-assertively ensures access to the appropriate response, whatever the situation.**

PURPOSE

Entering training and employment in these fields requires that one integrate the responsibilities and expectations of one's personal, family, and work roles. Certain skills are required to ensure that learners can survive and flourish in the new environment that will be created. Academic skills will be covered in the units under that name. This topic explores personal survival skills. These will enable the learners to modify the requirements of their life situations to create as little stress as possible, and to respond clearly, creatively, and assertively to those stressful situations that do unavoidably arise.

REQUIREMENTS

This topic requires a commitment to participate fully in class and individual activities, and a willingness to examine and maybe even change behaviour.

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Manage the Requirements of Home and Work

LEARNING OUTCOME

On completion of this unit, learners will be able to create a plan of action for constructively managing the requirements of home and work.

Note: A most useful and important resource to this unit is the book, Becoming a Master Student.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify the requirements and responsibilities for tasks to be done in home, community, and training/work situations. Also, identify the personal and societal expectations and standards to be met in completing those tasks.	• View the video, *All in a Day's Work*. Conduct a class discussion, asking learners to share what they see as the most difficult elements they must juggle and where they find their support. • Have learners complete exercises in *Personal and Life Management Skills for Women* that deal with "juggling roles". • Read the "Time" chapter of *Becoming a Master Student*. In small groups, discuss the areas wherein learners have the most difficulty with time. • Ask learners to create a web that includes themselves and highlights their relationships and activities within their home, work, neighbourhood, school, and community, and the interrelationships between them.
• Analyse the time constraints created by expectations and standards, and describe time-management techniques.	• Using the web, have them list tasks done in an average week at home and in the community. Include: family needs and expectations, household tasks, social and community involvements, educational and work commitments. What are the additional issues of concern to women with disabilities? • Discuss the "25 ways to get the most out of now," and "Studying With Children Underfoot" sections in *Becoming a Master Student*, and ask learners to identify which strategies would most meet the needs they identified from their web. • Document the time spent on tasks over the next week, using the strategies to assist with meeting the requirements learners set for themselves. Consider using the exercises from *Discovering Life Skills with Women*, Vol.III, pp. 95-99. Modify as needed. • Discuss "Time Saving Ideas" from Alan Lakein's book, *How To Get Control Of Your Time And Your Life*. Use the material to provide learners with additional strategies for time management.

Specific Learning Objectives	**Teaching/Assessment Strategies**
Identify and evaluate stress points and personal costs, and determine what modifications could be made to the responsibilities and expectations of your tasks.	• Using the information gathered in this unit, ask questions such as: "What items on this list can you, or would you like to, stop doing, cut down on, delegate, etc?" (See Apply the Techniques of Stress Management unit.) • In small groups, discuss how changes in your home and work life can have an impact on your family. Outline potential coping strategies. • Ask learners to go back into small groups to analyse the effectiveness of strategies used for handling and modifying the demands of their tasks. • Have learners read the "Resources" Chapter in *Becoming a Master Student.*" Learners can research and identify the community and college resources that might be of assistance.
Evaluate personal financial requirements.	• Ask learners to read the Money Chapter of *Becoming a Master Student* and complete the exercises, creating a monthly budget with income and expenditures. This list will be helpful when determining the financial requirements of school and work, and the wage levels necessary to succeed. (See Resources for Microsoft Money Program.) • During the next week encourage learners to monitor where they regularly spend their money. Have them analyse in their journals the difference between what they are regularly spending and what their budgets require. Have the class develop strategies to meet their goals.
Explore and evaluate potential workplace accommodations.	• Consider using the exercises in *Discovering Life Skills With Women*. Vol I, pp. 152—158 and Vol.III, pp. 101-104. • Review *Family-Related Leave and Benefits, Work and Family—Flexible Working Arrangements, Strategies for Working Families* and/or *Work and Family—The Crucial Balance* and *Living with Disability in Canada: An Economic Portrait*. Conduct a class discussion on the application of these policies to the TTO workplace, and ask learners to suggest other accommodations that might be of assistance.
Create a plan of action that demonstrates an ability to manage the requirements of home, work, and community.	• Outline a plan of action that includes: a study plan; time management and delegation plan for home, work, and community responsibilities; and a financial management plan.

RESOURCES

Books

- *The Adult Back to School Book — Making a New Beginning.* Province of British Columbia Ministry of Skills, Training and Labour Victoria, 1994.

  A BC version of the Alberta Job Seekers series, including *The Job Seeker's Handbook: Marketing Your Skills* and *The Job-Loss Workbook: Creating a New Future,* is available from the Open Learning Agency. Ph: 1-800-663-1653. In Alberta it is available through Learning Resources Distributing Centre, Ph: (403) 427-5775.

- Bingham, Mindy and Sandy Stryker. *More Choices: A Strategic Plan for Mixing Career and Family.* Advocacy Press, 1993 0-911655-28-x

- de Wolff, Alice. *Strategies for Working Families.* Toronto: Ontario Coalition for Better Child Care, 1994. Ph: (416) 588-0628; Fax: (416) 538-6737. ISBN 1-895638-14-8

  Translated by the Canadian Labour Congress, this publication covers policy and program interventions related to Maternity/Paternity/Parental and Family Leave; Flexible work arrangements, Child and Elder Care and bargaining.

- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994. (See "Develop Self Awareness" unit for review.)

- Fawcett, Gail. PhD. *Living with Disability in Canada: An Economic Portrait.* Ottawa: Office for Disability Issues, Human Resources Development Canada, 1996. Ph: (819) 953-7260. ISBN 0-662-25110-5.

- Lakein, Alan. *How to Get Control of Your Time and Your Life.* New York: Penguin. Revised June 1994.

- Long, Bonita C. and Sharon E Kahn (Eds.) *Women, Work and Coping: A multidiscipline approach to workplace stress.* Montreal/Kingston: McGill-Queen's University Press, 1993.

- OWD and United Food and Commercial Workers Union Canada. *Balancing Work and Family Responsibilities: Union Discusses the Issues.*

- Satir, Virginia. *Making Contact.*

  About relationship and clear communication, being centred and balancing needs.

- Ulmar, Amal and Tara Holmes. *Making Changes participants workbook: employment and life skills orientation for immigrant women in Alberta.* Arusha, 1986.

- *Workplace Supports for Workers with Family Responsibilities.* Ottawa: Status of Women Canada, 1993. Available free from Status of Women Canada, Communications Directorate. Ph: (613) 995-7835; Fax: (613) 943-2386; TDD: (613) 996-1322.

  This federal/provincial labour officials document describes a variety of family-friendly options and explores the implications of each for governments, employers and employees.

- YWCA Life Skills Division. *Discovering Life Skills with Women.* Vol. I, II, III, IV and V. Toronto, Ontario: YWCA Metro Toronto, 1976-1982. (See "Apply the Techniques of Stress Management" for review.)

- Zieglar, Maggie, and Berman, Sandy. *Personal and Life Management Skills for Women.* (See "Apply the Techniques of Stress Management" for a review.)

- *Work and Family: The Struggle to Juggle.* Ontario Women's Directorate, 2 Carlton Street, 11th Floor, Toronto, Ontario M5B 2M9, 1991. Ph: (416) 314-3988; Fax: (416)314-0256. CITZN

  This manual is designed to train supervisors, managers and human resources staff to promote and manage a workplace that supports balancing paid work and family responsibilities. This complete workshop kit includes trainer's notes, participant handouts, overheads and sample agendas in a three-ring binder.

- *Family-Related Leave and Benefits.* Ottawa: Labour Canada Women's Bureau. HRDC Women's Bureau. Ph: (819) 994-2603; Fax: (819) 953-5482.
- *Work and Family—The Crucial Balance.* Ontario Women's Directorate, 2 Carlton Street, 11th Floor, Toronto, Ontario M5B 2M9, 1991. Ph: (416) 314-3988; Fax: (413) 314-0256. CITZN
- *Work and Family—Flexible Working Arrangements.* Ontario Women's Directorate, 2 Carlton Street, 11th Floor, Toronto, Ontario M5B 2M9, 1991. Ph: (416) 314-3988; Fax: (416) 314-0256. CITZN

Videos and Films

- *All in a Day's Work.* A Video Workshop Kit, VHS, 17 minutes. Ontario Women's Directorate, 2 Carlton Street, 11th Floor, Toronto, Ontario M5B 2M9, 1991. Ph: (416) 314-3988; Fax: (416) 314-0256. CITZN

  This video explores the issues of balancing work and family responsibilities, including childcare and elder care. Makes recommendations.
- *The Working Mom's Survival Guide.* video. Andover, Mass.: Xenejenex Productions, 1990.

Apply the Techniques of Stress Management

LEARNING OUTCOMES

Upon completion of this unit, when presented with case studies, learners will be able to describe short- and long-term strategies for coping with stress, and apply some tested techniques.

Note: Some learners may have resistance to relaxation exercises. Encouragement is OK, pressure to conform is not. Each individual is the best judge of their own capacity. If you are not comfortable delivering this material, there are often excellent community resources available.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify stress factors in daily life.	• Review with learners the Introduction and Sources of Stress in the Stress section of *Personal and Life Management Skills for Women*. Ask learners to check off those Stress Symptoms that they have noticed in themselves. • Brainstorm sources of stress, using categories such as: At Work; At Home; At School; Nutritional Deficiencies; Relationships; the World Around Us; Belief Systems. After brainstorming, allow time for discussion.
• Examine and discuss personal responses to stress.	• Identify those stress factors that learners feel they can control, and those they feel they cannot control. • Ask learners to make a list of things that cause them stress. In small groups, learners share the lists and discuss their responses to stress (e.g., physical, emotional, spiritual), as well as how they have been coping, or not coping. • From the lists, learners identify those things that can be changed, and those that cannot.
• Identify and describe short-term and long-term coping strategies for stress management.	• Review "Identify Short- and Long-Term Coping Strategies," in *Personal and Life Management Skills for Women*. Have learners read "Your Machine: Rest it; Observe it," in *Becoming a Master Student*, and/or "More decisions!" from *The Training and Education Planner*. Ask learners to make a list of those strategies they feel most comfortable using. Engage the class in a discussion about what makes some strategies easier to undertake than others.

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Specific Learning Objectives	**Teaching/Assessment Strategies**
	• Distribute the Handout: The Purpose of Personal Support Systems. Discuss information on the handout and have learners retain it for personal reference. (See also *Becoming a Master Student.*)
• Practise stress-management techniques. Devise a plan for applying the techniques in daily life.	• Using the Stress Scenarios, in *Personal and Life Management Skills for Women*, Part II, have learners in small groups determine the most effective strategies for each scenario and present this to the class with their reasons. Why is one strategy better than another in a particular situation?
	• Consider using *Discovering Life Skills with Women*, Vol. III, Stress Management for support system, and relaxation and breathing exercises.

RESOURCES

Books

- Alberta Advanced Education and Career Development. *The Education and Training Planner.* Revised 1996, Edmonton, Alberta. Learning Resources Distribution Centre. Ph: (403) 427-5775; Fax: (403) 427-9750. ISBN 0-7732-0608-6. $4.00/copy outside Alberta.

  Alberta focused, this booklet looks broadly at education and training options, budgeting and financial aid, support systems and decision making.

- Adams, John D., ed. *Understanding and Stress: Readings.* San Diego, California: University Associates, 1980.

  APPENDIX 1: "A Variety of Ideas for Responding to Stress" provides a clear list of simple suggestions for reducing or coping with stress. Makes a great handout.

  Chapter 11: "Developing and Using a Personal Support System" describes the rationale, definitions, development, and functions of support systems in both stress reduction and performance achievement. An effective framework to develop a very useful tool.

- Ellis, David B. *Becoming a Master Student.* Boston, Houghton-Mifflin Company, 1994. (See "Develop Self-Awareness" for review.)

- YWCA Life Skills Division. *Discovering Life Skills with Women*, Vol. I - V. Toronto, Ontario: YWCA Metro Toronto, 1976-1989.

  Page after page of excellent exercises and source ideas for exploring everything from anger to conflict resolution, values and self-esteem to communicating effectively, as well as creative coping with time, money, stress, and general problem solving.

- Zieglar, Maggie, and Berman, Sandy. *Personal and Life Management Skills for Women: A Manual for Facilitators*, Parts I, II, and III. Surrey, BC: Kwantlen University College, Revised 1996.

  A very useful resource book filled with exercises for life skills, assertiveness training, and stress management, as well as facilitator's training in the use of group work: small group discussion, brainstorming, flip charts, rounds, role plays, etc. Includes audio tapes for guided relaxation exercises.

Films and Videos

- *Stress, a personal challenge* with Dr. Hans Selye. A motion picture, leader's manual and participant's guide. New York: ABC Wide World of Learning; Toronto: International Tele-film [distributor], 1980.

The Purpose of Personal Support Systems

A personal support system is a resource pool that can be drawn upon selectively to support us, help us move in a direction of our choice, and leave us stronger. It is a network of supportive relationships that can be drawn on as needed to help achieve one's objectives. It may help us re-establish our competence and ability to cope and function at our previous level of functioning in times of high stress or major transitions. It can also help us develop new skills and maintain high levels of performance.

The Functions and Roles of Support System Members

1. Role models: show us what is possible and provide a valuable source of information about opportunities and problems associated with a given role.

2. Shared common interests: keep us motivated; collective activity to encourage change.

3. Close friends: provide nurturing and caring; keep us from becoming isolated.

4. Helpers: people who can be depended on to provide assistance in a crisis.

5. Respect competence: people who respect your skills and value your contributions.

6. Referral agents: people who can connect you with resources through their knowledge and organizations.

7. Challengers: people who can motivate you to explore new ways of doing things, develop new skills, and develop latent capabilities.

Manage Childcare[27]

LEARNING OUTCOME

Upon completion of this unit, learners will be able to locate and evaluate potential childcare.

Specific Learning Objectives	Teaching/Assessment Strategies
• Examine personal feelings about childcare outside the home.	• Ask learners to write down how they feel about leaving their child (children) in a childcare program (or with a sitter). Also, they should state how they think their child (children) feel about being placed in a childcare situation (or left with a sitter).
• Identify available local childcare resources.	• In a class discussion, have learners describe their present childcare arrangements. • Ask them to describe their present back-up childcare arrangements (in the event the child is ill and can't go out, or in the event their regular arrangement is unavailable).
• Evaluate childcare settings using specific criteria.	• Ask learners to investigate childcare settings available in the community. • On a sheet of paper, ask learners to evaluate childcare arrangements using the following criteria: - Reliability - Play space - Food/Nutrition - Variety of Activities - Individual Attention - Communication/Co-operation with the Child - Care Provider - Cost - Accessibility - Hours of Operation • Identify, evaluate, and present two potential child-care arrangements. • Ask those who are parents to locate and evaluate their childcare arrangements and two other potential settings using the Handout: Evaluating Childcare Arrangements as a guide.

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[27] Much of this material was adapted with permission from the COPE Program (Career Opportunities and Preparation for Employment) developed by Linda Breault (University College of the Cariboo, Kamloops British Columbia)

RESOURCES

Books and Articles

- *Work-Related Child Care in Canada.* Labour Canada Women's Bureau. Ottawa, 1990. Available from HRDC. Ph: (819) 994-6313 or Fax: (819) 953-7260.

- de Wolff, Alice. *Strategies for Working Families.* Toronto: Ontario Coalition for Better Child Care, 1994. Ph: (416) 588-0628; Fax: (416) 538-6737. ISBN #1-895638-14-8

  Translated by the Canadian Labour Congress, this publication covers policy and program interventions related to Maternity/Paternity/Parental and Family Leave; Flexible work arrangements, Child and Elder Care and bargaining.

- *Evaluating Child Care Providers.* Province of British Columbia, Ministry of Social Services, 1995. Resource Centre. Ph: (250) 231-3663.

  Check out Women's Ministries and Social Services ministries or those responsible for information about childcare in your province.

Evaluating Childcare Arrangements

A.The Staff(e.g., sitter, caregiver)

A competent caregiver should: be warm and responsive with children; encourage intellectual growth and development; be respectful of the child's individual needs; be capable of dealing with the demands of caring for children; be consistent and fair in discipline.

1. Do staff smile and look directly at the children when talking with them, establishing eye-to-eye contact?
2. Do staff appear to be physically relaxed with the children when touching, approaching, or talking to them?
3. Do the children appear to trust the staff and turn freely to staff for help, information, and comfort?
4. Where do staff appear to spend most time: working with the children; arranging materials; talking with the other adults, parents, or staff in the program? What seem to be the priorities of staff?
5. Do staff guide the children in using toys, materials, or equipment?
6. Do staff ask the children simple yes or no questions, or do staff require creative, thoughtful, or imaginative answers, which stimulate the children's language and thought?
7. Do staff allow and encourage decision making by the children?
8. Do staff have a set routine or schedule for the children? Are you satisfied with this schedule? Does the routine allow for a variety of needs to be met?
9. Do staff expectations and treatment differ for boys and girls?
10. Do staff categorize children or gossip about their families?
11. Do you think the staff will be able to meet the special needs of your child (e.g., providing comfort and guidance)?
12. Do staff display humour and common sense in dealing with children?
13. Do staff seem to be easily rattled if things are not going right?
14. How does the staff reward and discipline a child? Are you comfortable with these methods? Are they consistent with your own? Consistent (not rigid) handling of children is important. Are staff expectations realistic for the developmental age of the child?
15. Is the staff always saying "Do this" or "Don't do that" to the children?

16. Do staff help to mediate in potentially explosive situations, such as fights over toys, name calling, or physical aggressiveness?
17. Is the staff trained? Licenced? Is there a first-aid attendant?

B. The Environment

The environment related to childcare includes both the interactions of the individuals in the group, and the arrangement and organization of space and materials.

1. Do the children appear to be comfortable and friendly with each other, or are there numerous fights and disturbances?
2. Do the children encourage one another, appear to play well with others in the group, and work co-operatively among themselves? Do they do these things without constant interference from adults? Are they self-directed; can an adult suggest an idea and then leave them to continue?
3. How many children are in the group?
4. Are there enough qualified people to meet the individual needs of your child? (Small groups are very important to young children, as is free access to an adult.)
5. Check for the following features:
   - Are there sharp edges on the furniture?
   - Are wall plugs covered and extension cords not overloaded?
   - Are detergents, medications, and sharp instruments out of reach? (Ask about these items.)
   - Are stairs and low windows adequately protected? Are there sufficient exits in case of emergency? Is there sufficient lighting and adequate cleanliness? Are outside play areas safe from traffic?
6. Is there enough space for the number of children? Is it divided? Is there an outdoor play area?
7. Is furniture and equipment arranged in such a manner that your child can crawl, walk, and explore freely?
8. Are there spaces in the setting for the children to work or play quietly and actively with materials and equipment? Are a variety of needs being met at the same time?
9. Are there adequate areas and facilities for the children to rest and sleep?
10. Are there special areas for a variety of activities: blocks, reading, dress up, arts and crafts? Are potentially noisy and active areas (blocks, jungle gyms, house-keeping corner) physically separated from the quiet areas (reading, puzzles, art centres)?

11. Are there sufficient materials? Do you notice a large number of children struggling for the same material, or do they have to wait more than five minutes to use them?
12. Is there variety? Are there toys and materials for activity times (hoops, balls, wagons, tricycles, large climbing blocks) and quiet times (puzzles, trucks, dolls) and building materials (clay and blocks)?
13. What about accessibility and organization of materials? Are the toys and materials within the children's easy reach? Can they get to them without the assistance of an adult? Are the materials arranged so that the children can tell where things are located, and what is available for them to use?
14. Do other parents like the service? Can references be provided?

C. DANGER SIGNS: ANY of these signals should rule out a setting from your final choice.

1. The staff does not want you to visit the program or ask specific questions about what your child will do during the day. You need to observe a program several times before you have an accurate idea of what is going on.
2. The children move about the program without any guidance from the adult for thirty minutes or more. They have no apparent involvement with anything or anyone.
3. The staff does not respond to the children. They look past the children when talking to them and gives the general impression of not caring about or responding to the children's presence.
4. The staff often sound angry or cross.
5. The staff seems overwhelmed with the work and the responsibility of caring for the children.
6. The staff is physically rough and abuses the children.
7. The setting is dirty. The setting is unsafe. The staff are messy or sloppy in physical appearance.
8. Your child appears unhappy and suddenly doesn't seem to be eating or sleeping well and doesn't have much enthusiasm for playing with you, other children, and with toys.

Develop and Practise Assertive Skills

LEARNING OUTCOME

Upon completion of this unit, learners will be able to demonstrate effective assertive communication in a variety of simulated and real-life situations. Successful assertiveness training requires that personal development and behavioural change take place. As this rarely happens overnight, it is essential that this unit be seen as an ongoing workshop, with a certain amount of theory and self-disclosure at the outset, building to some critical thinking and analysis. This should lead to personal behavioural experimentation and choice, and culminate in practising the new behaviours. It would be difficult to accomplish this in less than four to six sessions of two to three hours each.

Cross-Cultural Note: TTO (Trades, Technical and Operations) workplace culture in Canada often assumes that using open and direct communication results in effective problem solving. Many cultures place a higher value on silence and self-restraint, refraining from speaking. Brainstorming and role playing may require more time to address these concerns. As well, make time for discussion of differences in the cultural socialization, values and belief systems of participants.[28]

Note: The books mentioned in this unit are all extremely useful in providing training in this area. They are not all required, but using some of them will prove very worthwhile.

Specific Learning Objectives	Teaching/Assessment Strategies
• Define and describe passive (non-assertive), aggressive, and assertive behaviours.	• Brainstorm definitions and descriptions of the three types of behaviour: passive or non-assertive, aggressive, and assertive. Use *Responsible Assertive Behaviour*, as a resource, or *Self-Assertion for Women*, or *The New Assertive Woman*. See the chart in *Personal and Life Management Skills for Women*, Vol. III. • Show the film, *When I Say No, I Feel Guilty*. Discuss, for example, whether learners feel they could operate in that style, what the difficulties might be.
• Explain why assertiveness is particularly important for women.	• Conduct a class discussion that includes an analysis of women and power (using *Self Assertion for Women*, or *Personal and Life Management Skills for Women*, III; and socialization using *The New Assertive Woman*, and *Responsible Assertive Behaviour*.

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[28] Many of the ideas included under Cross-Cultural Notes are derived from the work of Sandy Berman and Adrienne Montani, found in *Cross-Cultural Lifeskills—A Manual for Facilitators*

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Specific Learning Objectives	Teaching/Assessment Strategies
• Examine the issue of personal rights.	• See *Personal and Life Management Skills for Women*, Vol. III, exercises 62, 63, and 64 to help learners examine and define their personal rights. Consider the cultural influences that might determine those definitions. Refer to *Cross-Cultural Lifeskills.* Read *The New Assertive Woman* pp. 23-42, for descriptions; read *Responsible Assertive Behaviour* on "Developing an Assertive Belief System," pp. 55-64. What are the commonalities among the lists? Ask learners if there are any rights that they have a particularly hard time believing.
	• Distribute the handout: Everywoman's Bill of Rights, and ask learners to describe situations where they believe themselves to have these rights and to identify situations where they feel they might not have a particular right. Are there any additional rights that can be added to the Bill?
• Identify barriers to personal assertiveness.	• Make a presentation to learners based on the information in *Self-Assertion for Women*, "What are you telling yourself?," *The New Assertive Woman*, "What is your Waterloo?—Blocks to Assertiveness." In small groups, share specific examples of how participants keep themselves from acting assertively. Analyse the cultural and cross-cultural messages that may apply. Discuss strategies for dealing effectively with the examples.
• Identify the importance of non-verbal behaviour in the communications process.	• See *Personal and Life Management Skills for Women* Vol. III, exercise 68, on non-verbal communication when being assertive; read *Self-Assertion for Women* on "The Non-Verbal Message" for background. Check out *The New Assertive Woman*, "Body Language Says More Than You Think," for theory and exercises. Also, *Your Perfect Right*. Consider the potential double messages that can result from differing verbal and non-verbal messages.
• Distinguish between aggressive, passive (non-assertive), and assertive behaviour.	• Using situations such as those found in *Responsible Assertive Behaviour*, or using your own, ask learners to take turns demonstrating aggressive, passive, and assertive behaviour for each situation. Ask the rest of the group to identify which techniques are being used for each situation.

Specific Learning Objectives	Teaching/Assessment Strategies
• Practise effective assertive behaviour in saying "No," making requests, and constructive criticism.	• *Personal and Life Management Skills for Women section* II, provides exercises to accomplish this objective. It includes descriptions and guidelines for role playing, giving feedback, and constructive criticism, as well as useful handouts. *Cross-Cultural Lifeskills* provides excellent direction for modifying these exercises for a multicultural environment. The "Interpersonal Communications" section of *Native Literacy and Life Skills Curriculum Guidelines* has an excellent, very specific "Summary of Basic Communication Skills". Information appearing in *Your Perfect Right* provides step-by-step procedures for self-observation during the exercises. Role-play situations are also provided in the section, "Assertive Behaviour Situations." Learners can also generate their own examples. Videotaping can be a valuable resource in this process.
• Describe situations where assertiveness was useful or necessary.	• In journals, have learners keep track of their feelings and perceptions in situations that arise where assertiveness would be an asset. Encourage them to analyse their performance in those situations: what kind of responses are they getting from men, and from women? In what way does power play a part in the interactions?

RESOURCES

Books and Articles

- Alberti, Robert E., and Emmons, Michael L. *Your Perfect Right: A Guide to Assertive Living.* 25th Anniversary edition. San Luis Obispo, California: IMPACT, 1995.

  The book that started it all. A clearly written, step-by-step description of how to assist people through the difficult process of changing ingrained and no longer useful behaviour. It also describes some possible adverse reactions before people have really integrated what they are doing with why they are doing it. Revised and updated with new material on living in a multicultural society, making the decision to express yourself, new recommendations on anger expression and anxiety treatment.

- Berman, Sandy, and Adrienne Montani. *Cross-Cultural Lifeskills—A Manual for Facilitators.* Surrey, BC: Surrey Delta Immigrant Services Society, Revised 1993. (See "Develop Self-Awareness" unit for review.)

- Bloom, Lynn Z.; Coburn, Karen; and Pearlman, Joan. *The New Assertive Woman.* New York: Delacorte Press, 1975. (paperback edition)

  This unique book takes women through the process of change by first determining where socialization has had an effect, then outlining and analysing what individual rights are for women in many situations. It explores the games women play to avoid being assertive, and the irrational belief system that can create the blocks to assertiveness. It culminates in building assertive skills.

- Butler, Pamela E. *Self-Assertion for Women.* Toronto: Harpercollins, Revised 1992. ISBN 0062501216. Out of print check your local library.

  A very readable and descriptive book that outlines how traditional social values influence female behaviour patterns and suggests strategies for a "metamorphosis from stereotyped femininity to androgyny... at the core of self-assertion is an awareness of and respect for one's own feelings."

- Cawood, Diana. *Assertiveness for Managers: learning effective skills for managing people.* North Vancouver: Self-Counsel Press. 3rd edition, 1992. (Chapter on "Making The Breaks: Visibility, Intimidation, and Networking")

- Lange, Arthur J., and Jakubowski, Patricia. *Responsible Assertive Behaviour*, Champaign, Illinois: Research Press, 1976.

  Subtitled "Cognitive/Behavioral Procedures for Trainers," this volume is a must for people providing assertiveness training. It teaches you, while showing you how to teach. The analysis, descriptions, and suggestions for "homework" are given from the perspectives of both the trainer and the participant, mostly in clear, simple terms.

- Rees, Shan & Graham, Roderick S. *Assertion Training: How to Be Who You Really Are.* (Strategies for Mental Health Series). London & New York: Routledge ,1991. ISBN 0-415-05816

- Sawyer, Don, Brian Mathews, Kaui Keliipio, and Susan Couch. *Native Literacy and Life Skills Curriculum Guidelines—A Resource Book for Adult Basic Education.* Okanagan University College and the Province of British Columbia, 1984. Reprinted 1990. (See "Practise Self-Assessment" for review).

- Weiss, Lynn and Lora Cain. *Power Lines : What to Say in 250 Problem Situations.* New York: Harper Mass Market Paperbacks. 1995. ISBN: 0061008877.

- Zeiglar, Maggie, Berman, Sandy, and Coyle, Linda, ed. *Personal and Life Management Skills for Women.* Vol. III. 1977 (See "Apply the Techniques of Stress Management" for further information.)

  Zeiglar and Berman have written an excellent manual for facilitators of Assertiveness Training workshops, with a clear introduction and exercises that focus on practical skills.

Everywoman's Bill of Rights

1. The right to be treated with respect

2. The right to have and express your own feelings and opinions

3. The right to be listened to and taken seriously

4. The right to set your own priorities

5. The right to say no without feeling guilty

6. The right to ask for what you want

7. The right to get what you pay for

8. The right to ask for information from professionals

9. The right to make mistakes

10. The right to choose not to assert yourself

Work-related Skills

Health and Safety

UNITS

- Use Safe Work Practices
- Develop and Maintain Occupational Fitness

KEY IDEAS

- Safe work habits are essential for continued employment.
- Understanding and using safe work practices — lifting, using chemicals, occupational health issues, etc., are important.
- Knowing how to use the regulations and procedures of the Workers' Compensation Board can save lives, prevent stringent fines, or save time and energy.
- Developing and maintaining occupational fitness is an essential component in obtaining continual employment in trades and technology.

PURPOSE

Developing and maintaining personal health and fitness is only a portion of what is necessary in maintaining health and safety on the job. In addition, it is vital to use safe work practices, understand occupational health and safety issues, and know what to do in emergency situations, such as accidents or fire. This topic area provides the basis for that training. Women have generally received less fitness training throughout their lives and less exposure to industrial and technical worksites. So, they can sometimes feel clumsy or unfamiliar in these new environments, which may lead an employer to question their ability to do the job, regardless of their technical training. The occupational fitness unit provides exposure and training in areas that will allow people to operate more comfortably in a variety of environments. This topic develops competency in working comfortably in these environments and will provide a base for self-confidence for working in many areas, regardless of the physical requirements.

REQUIREMENTS

This topic requires a commitment to working safely, the ability to read and understand the Workers' Compensation Board regulations, and a commitment to developing and maintaining personal health and fitness throughout the course.

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Use Safe Work Practices

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to demonstrate knowledge of the Workers' Compensation Board regulations and practices and demonstrate safe work practices and emergency procedures.

Specific Learning Objectives	Teaching/Assessment Strategies
• Demonstrate knowledge of Workers' Compensation Board regulations and practices.	• Read *Outdoor Power Equipment and Motorcycle Service Technician (OPE) Learning Guides A-1 and 2*. Invite a Workers' Compensation Board speaker to the class to provide information and to clarify issues. WCB could also present a "Back Talk" on safe lifting. Have learners practise lifting objects safely. • Ask learners to read Provincial/Federal Worker's Compensation Act and Occupational Health and Safety Regulations. Using this material, describe in class discussions: - who is covered - who is not - who has responsibility for inspection and investigation - who has responsibility for education - what injuries or illnesses are covered, and under what circumstances - what benefits are possible • Describe and distinguish between provincial/federal responsibilities, employer's responsibilities and worker's responsibilities with regard to safety. • Outline the potential activities of a Health and Safety Committee. • Have learners complete an open-book examination relating to WCB Regulations (see OPE Safety self-tests).
• Describe general safety practices for trade areas.	• Read and discuss Section 5, "Are there Special Risks for Women Who Take Jobs Traditionally Assigned to Men?" in *Occupational Safety and Health Concerns of Canadian Women*. Are there particular precautions, equipment, or accommodations that might increase women's effectiveness on these worksites? See also "Coping with Safety Issues on the Job" and "General Safety Rules" from *Bridges to Equity Participant's Workbook*.

Specific Learning Objectives	**Teaching/Assessment Strategies**
	• Brainstorm lists of general safety precautions relating to personal apparel, personal protective equipment, general housekeeping, and lockout procedures. View safety videos (see Resources).
	• Read *Personal Protective Equipment for Women* and research where equipment is available in the local area.
	• Review material from Workplace Safety Regulations in *Career and Personal Planning 8 - 12: A Resource for Schools*, and discuss "Case Histories" in class discussion.
• Use basic body mechanics when lifting objects.	• Show the films, *Back Care* and *Body Mechanics and Back Pain*, or other films locally available. Invite the Workers' Compensation Board to do a Back Talk (if not already done). Read "Safe Lifting and Carrying Procedures" from *Bridges to Equity Participant's Workbook*.
	• Ask learners to describe and practise effective lifting techniques for a large sheet of plywood, a container with handles, and a container without handles.
• Obtain WHMIS [Workplace hazardous materials information system] certificate	• Read *OPE A-2*, "Describe hazardous materials..." and "Describe WHMIS." Contact local college or private trainer to set up a WHMIS training session.
• Obtain Survival First Aid competency certificate.	• Show the video, *Level One First Aid*. Set up a first aid session with a licensed instructor. Check with your institution for the regularly scheduled classes. Session should include at minimum: - controlling bleeding - artificial respiration - cardio-pulmonary resuscitation (C.P.R.)
• Demonstrate competence in extinguishing small fires.	• Read *OPE A-3*, "Apply Fire Safety." Show the video Modern Portable Fire Extinguishers, or another resource describing the makeup and effective use of fire extinguishers.
	• Ask learners to research and present a short paper on the four types of fires (A,B,C,D) and the process for extinguishing them.
	• Contact the local fire department and arrange a practical fire-fighting session.
• Analyse the elements and potential outcomes of responsible safety consciousness.	• Using Handout: "If You Don't Know...Ask! Before You Start," ask small groups to discuss the pros and cons of approaching an employer with those questions.

RESOURCES

Books

- Province of British Columbia. *Outdoor Power Equipment and Motorcycle Service Technician Learning Guides.* Victoria, 1995. Available from the Open Learning Agency. Ph: 1-800-663-1653.

  These learning guides build upon earlier competency-based materials and provide good up-to-date descriptive information and self-testing opportunities on both general knowledge issues for tradespeople and specific knowledge issues for those trades. Strong technical and content contributions from Alice MacPherson, motorcycle mechanic, instructor and co-founder of Vancouver Women in Trades.

- Province of British Columbia. *Use Safe Work Practices.* (Second edition) Common Core Learning Guide Line A. Victoria, BC, 1986. Available in BC college bookstores or from the Open Learning Agency.

  Covers the topic quite well and concisely. Credit can often be given to those learners continuing in a trade area for the work completed in the entry level Common Core.

- Province of British Columbia. *What's WHMIS. Order from Worker's Compensation Board,* Films and Posters, 6951 Westminster Highway, Richmond, British Columbia V7C 1C6. Ph: (604) 273-2266; Fax: (604) 279-7406 (a 33-page information booklet)

- Messing, Karen. *Occupational Safety and Health Concerns of Canadian Women—A Background Paper.* Ottawa, Labour Canada Women's Bureau, 1991. Ph: (819) 994-6313; Fax: (819) 953-7260.

  A very good reference book freely available. Covers a multi-dimensional aspects of women's working lives with a solid section on women in traditionally male-dominated jobs.

- *Personal Protective Equipment for Women: Addressing the Need.* Industrial Accident Prevention Association, 250 Yonge Street, Toronto, Ontario, 1991. Ph: (416) 506-8888

  The limited availability of personal protective equipment for women is a critical workplace health and safety issue. The first part of this booklet deals with an exploration and analysis of this issue. The second part is a directory that lists some manufacturers and suppliers who are able to meet the PPE needs of women workers.

- *An OSH Program in Your Work Place: Occupational Safety and Health.* Ottawa: Human Resources Development Canada, 1994. Available through Publications Distribution Centre HRDC Labour Program Ph: (819) 953-7260.

- *WHMIS in your workplace.* Ottawa: Human Resources Development Canada, 1995. Available through Enquiries Centre Ph: (819) 953-7260.

- *Workplace Inspections-Four Steps to Safety and Health, Occupational Safety and Health.* Ottawa: Human Resources Development Canada, 1995. Available through Public Enquiries Centre Communications Branch Fax: (819) 953-7260

- *Safety and Health Committees and Representatives, Safety and Health in the Work Place.* Ottawa: Human Resouces Development Canada, 1994. Available through Publications Distribution Centre HRDC Labour Program Tel: (819) 953-7260.

- Provincial and Federal Worker's Compensation Regulation books, and Occupational Health and Safety Regulations.

Films and Videos

- *Back Care.* VHS. 13 min. 1990. Magic Lantern. Ph: West 1 800 263-1818; East 1-800-263-1717. Distributed in BC by AEMAC.

  Describes the back and how it works; includes demonstrations of common types of back injuries and their causes, and the short- and long-term effects of back injuries. Injury prevention techniques are shown. Back muscle strengthening exercises and proper lifting techniques are illustrated.

The Workers' Compensation Board may also be able to recommend comparable films.

- *Body Mechanics and Back Pain.* VHS 10 min. 1990. Produced by Skol Corporation in association with Video/Visuals, Inc. International Telefilm. Ph: 1-800-5561-4300.

  Reviews the anatomy and physiology of the back and shows how good posture, proper use of body mechanics (lifting, bending, etc.), exercise and general physical fitness can prevent back injuries.

- *Confined Spaces—Deadly Spaces.* VHS 13 min. British Columbia: WCB. Ph: (604) 276-3068 or 1-800-661-2112 audio-visual librarian.

  This video is designed for municipal workers to illustrate the basic rules for working in confined spaces. Oxygen deficiency and other potential dangers are covered. In addition, the health effects and physical characteristics of toxic gases including carbon monoxide, hydrogen sulphide, and methane are examined. Also focuses on exposing stereotypical attitudes of workers who neglect to take safety precautions.

- *Level One First Aid.* VHS 60:43 min. 1994. Produced and distributed by British Columbia WCB (BC). Ph: (604) 276-3068 or 1-800-661-2112 audio-visual librarian.

  Demonstrates first level first aid, which is designed to stabilize an accident victim until professional help arrives. Uses dramatic vignettes and animation. Topics include; assessing the scene, maintaining C-spine alignment, airway management, breathing management, recognizing shock, managing a major wound, haemorrhage control, CPR, minor wound management, and maintaining proper records.

- *WHMIS implementation: standardizing a program.* VHS. 25 min. Burlington, Ont.: Top Tape and Label Ltd.

  (W.I.S.H. system). Shows how to implement and maintain a successful program for handling and labelling workplace hazardous materials in accordance with Canadian legislation.

  WHMIS films and booklets are also available from your local Workers' Compensation Board offices.

- *Extinguishers.* Script, Irwin Devries; director, Curt Hunter. Vancouver: Justice Institute of British Columbia, Fire Academy. VHS. 16 min. 1987. Distributed in BC by AEMAC.

  This program details the four types of fires and explains the principles of operation of each class of extinguisher (A to D) that fights these fires.

- Films recommended to be shown in the Safe Work Practices unit include: *Noise*?; *You Are In Control; How Much Are Your Eyes Worth; Safety; Auto Shop Safety; Introduction to Safety in The Lab; Safety and Health in Oxyacetylene Applications; Portable Electric Saws; and Rigging—Wire Rope Slings.* It would be good to show the last five before learners enter the appropriate shops.

If You Don't Know ... Ask! Before You Start[29]

Ten Questions to Ask Your Employer

1. What are the dangers of my job?
2. Are there any hazards (noise, chemicals, radiation) that I should know about?
3. What site-specific safety orientation will I receive prior to commencing work?
4. Is there any safety gear I will be expected to wear?
5. Is training in emergency procedures (fire, chemical spill) required?
6. Where are fire extinguishers, first aid kits, and other emergency equipment located?
7. What are my health and safety responsibilities?
8. Who do I ask if I have a health or safety question?
9. What is the procedure if I am injured on the work site? Who is the first aid person?
10. Who is the site sponsor(s) responsible for supervising my work experience placement?

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[29] Adapted from W.C.B. Prevention Division Pamphlet If You Don't Know ... Ask! Before you Start by the Ministry of Education, Skills and Training for the CAPP Curriculum. Used with Permission.

Develop and Maintain Occupational Fitness

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to identify and develop a level of fitness appropriate to their occupational choice.

Note: This is an ongoing unit with daily, weekly, and long-term components.

Note: Please see "Occupational Fitness" in the Resources for the rationale and a description of this topic. It should be explored concurrently with all the units in the Work-Related Skills section, and with Examine Training and Employment Options, and Requirements in Trades and Technology.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify cultural restrictions that can affect women's physical development, and describe their impact on occupational fitness qualifications necessary for occupational choice.	• Conduct a class discussion that includes personal experiences and perceptions of cultural restrictions (e.g., ladies do not get their hands dirty) that can affect women's physical development. • Brainstorm ways in which cultural restrictions have an impact on occupational choice. Ask learners to make a journal entry relating to ways in which they have experienced these impacts.
• Appraise personal level of fitness	• Ask learners to complete a physical fitness analysis conducted by the Physical Education department (or someone from the local YW/YMCA) to appraise fitness in relation to muscular strength, cardiovascular endurance, flexibility, balance and co-ordination, breathing, etc. Use material from "Fitness Appraisal" in *Bridges to Equity Program Manual.*
• Investigate entry-level occupational fitness required for skilled trades and technologies generally, and three specifically chosen jobs.	• Have learners obtain information on fitness requirements from people working in the field, instructors, and research projects. (See Examine Training and Employment Options and Requirements unit.)
• Initiate individualized conditioning program geared toward meeting entry-level standards and improving overall fitness.	• Set up fitness stations, such as the one described in "Occupational Fitness" in Resources, and assist learners to create personal fitness programs.

Specific Learning Objectives	Teaching/Assessment Strategies
Describe the nutritional requirements of a physically active person.	Brainstorm the components of a balanced diet. If necessary, arrange for a presentation, perhaps by public health nurse.
Identify personal compensatory solutions for physical limitations.	Ask learners to read *Bridges to Equity Participant's Manual* "Developing Comfort With Tools and Technology" and discuss varieties of personal compensatory solutions. *Against The Grain*, pp. 6-8 and 10 is also an excellent resource.
Practise self-defence movements.	Set up and participate with learners in weekend or ongoing self-defence workshops (such as Wen-Do), or in a local recreation group.

RESOURCES

Books

- Bohnen, Elizabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Manual and Trainer's Guide and Participant's Workbook.* Toronto. City of Toronto, 1991. Dept. of the City Clerk, Resource and Publication Dept. 100 Queen Street West, Toronto, Ontario M5H 2N2. Fax: (416) 392-7999.

  These excellent resources contain specific learning activities and teaching strategies for bridging women into technical work.

- Boston Women's Health Book Collective. *The New Our Bodies, Ourselves.* New York: Simon and Schuster, 1996. Available through the college library system.

  A book filled with information and resources about every aspect of women's health, reproduction, sexuality, fitness, etc. Specifically useful for this unit are "Nutrition and Body Image," and "Women In Motion," and the piece on "Environmental and Occupational Health."

- Braid, Kathleen. *Zen Construction, Branching Out.* New Women's Magazine Society, Box 4089 8631 -109th St., Edmonton, Alberta.

  The reality of the first days on a construction crew, especially the physical exhaustion, awkward movements, and courage demanded, and the methods she used to overcome these troubled spots are vividly portrayed.

- McCormick, Dale. *Against the Grain: A Carpentry Manual for Women.* Iowa: City Women's Press, 1977.

  Written by a journeywoman carpenter, this book gives both philosophical and practical information of what to expect, what to do, and how to do it. Her philosophy will help any woman struggling to learn trades and technical work, and is an essential tool for beginning carpenters.

- Stothart, John. *Shape Up And Live!: Basic Handbook for Y Community Fitness Classes.* Edmonton, Alberta: Hallamshire Publishers, 1975.

  A self-help guide to appraise your level of fitness and how to establish a program designed to meet particular needs.

Periodicals

- *Healthsharing: A Canadian Women's Health Quarterly.* Toronto, Ontario: Women's Healthsharing Inc., 101 Niagara Street, Suite 200A, Toronto, Ontario, M5V 1C3.

  Pieces too numerous to mention on this subject. A good all-round resource on women's occupational health issues.

Occupational Fitness for Women[30]

Encouraged by the women's movement, the science of sports medicine is now revising societal definitions of optimal physical fitness standards for women. Studies indicate that there are often as many physical differences with the same sex as there are between men and women (John Money, Man and Woman, Boy and Girl). Today, more women are enjoying hard workouts, assured that their perspiration is human, and that their femininity will not suffer from hard physical work. Freedom from such constraints allows trainees to pursue a conditioning program that prepares them physically and psychologically to meet the demands of industry.

A major concern for employers is whether or not a woman applicant has the strength and endurance to do the job. Our society is used to associating strength with brawn, and when employers look at the average tradeswoman they usually see a 5'6", 120-130 pound woman (Braid, "Invisible Woman"). The employer needs assurance that this "normal-sized" woman can do the job, and, in this program, we provide our trainees with enough information and physical conditioning to convince the employer of her capabilities.

The initial introduction into her conditioning program is an overall assessment of her level of fitness. This assessment can range from simple to sophisticated, depending on community resources and program instructor's preference. Any fitness appraisal should include a determination of cardiovascular endurance (counting the heart rate response to the step test and measuring the recovery heart rate and blood pressure), muscular endurance (using the repetitive performance of push-ups and sit-ups to gauge), and flexibility (using sit and reach, and back extension exercises). It is here too, where we make sure that trainees begin to understand basic nutrition and the increased nutritional requirements of the physically active body.

Once a trainee has assessed her level of fitness and determined her desired fitness level and occupational goals, she records her progress daily, using a fitness profile chart. She regularly repeats the fitness appraisal and graphs her score.

A tradeswoman must train herself sensibly for the rigours of industrial work. Physical fitness is the ability to meet challenges (physical and/or psychological) efficiently and without undue stress. Relational learners (93 per cent of women in trades and technology training were found to be relational learners) hold tension and stress in the solar plexus region.

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[30] "Occupational Fitness" was written by Susan Booth for the Ontario Women in Trades and Technology program. Used with permission

Performance is enhanced when they can learn to clear that tension with breathing and stretching exercises.

Occupational fitness exercises are necessary for balance and coordination. The student will practise hammering spikes into a pounding block or toe nailing, alternating between right and left hands, and walking across scaffolds carrying 6 foot poles, working up to 25 times and increasing the number of poles regularly. She will climb ladders, starting with small ones, and working up to long extension-types, gradually increasing the size and weight of what she carries with her until she can confidently carry a box of shingles up the longest ladder. She will practise controlled swings with body and fender hammers as she pounds out dents in an automobile.[31]

"Working gracefully ... takes away some of the self-consciousness, is visible proof that physical and mental skills are integrated and proficient, and goes a long way to assure others you know what you're doing"

One important criterion used for evaluating flexibility, coordination, and balance for women within the trades is the development of grace. Working gracefully in a male-dominated environment takes away some of the self-consciousness, is visible proof that physical and mental skills are integrated and proficient, and goes a long way to assure others you know what you're doing (Braid, "Zen Construction," Branching Out.)

Other exercises that are part of the regular routine three times a week are push-ups (to work the triceps, deltoids, pectorals), chinning (for biceps, grip, upper back), dips (triceps, deltoids, pectorals), sit-ups (abdominals and hip flexors), sidebends (obliques), calf raises (calves), and squats (buttocks, lower back, thighs). If she's planning on working outside, her exercises could include jogging up to two kilometres in all types of weather. Whatever the exercises she chooses to engage in, the important thing is that every day she works on each of the five main areas and is able to chart progress toward her desired goal. By concentrating on work-related exercises, each woman also has the opportunity to plan how she can best compensate for aspects of physique that cannot be corrected, such as short arms and legs.

Another important component of occupational fitness is the completion of a self-defence course for women, which is scheduled for two full days for every program. This course enables a trainee to develop proper breathing and relaxation techniques in stressful situations, and helps her to see how she can focus her energy and increase her strength through mind and body integration; an added bonus is that self-defence training serves as a vehicle for planning effective ways to handle on the worksite.

And so, if we are to avoid lower back pain, muscle pulls and strains, physical decline and careless accidents caused by drowsiness or fatigue, we must pay attention to how physically fit we are to fulfil our job duties. Every worker should identify the physical requirements of the job. Workers should appraise their own individual levels of fitness and strive to improve this level by implementing an individual physical fitness program. This is particularly important for women who are entering [TTO] training or occupations.

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[31] Suggested by members of Women in Trades, Vancouver, B.C.

Women should not be deterred by the myth that female workers lack the physical ability for strength and endurance. There is evidence from kinanthropometrists who declare that although women usually have less muscle than men because they are smaller, they have the same strength per amount of muscle and are in relative terms as strong as men. Male workers vary greatly in their strength and co-ordination levels of ability. Every worker (male or female) should determine his or her own occupational fitness competency related to the job in question. Heavy work is a matter of practice and technique and need not be prohibitive for women. In the trades, hoists and mechanical lifting devices are used and very heavy material is routinely handled by two or more workers. Physical limitations not only apply to some women but also to some men. Women as well as men condition themselves to hard tasks. Most women can handle the work and don't want to be protected or coddled. All workers should use safe lifting techniques and mechanical or hydraulic lifting devices whenever possible. Workers should assure themselves of physical comfort by raising their workplace to a comfortable level to avoid bending, which strains back muscles.

Workers who feel their level of fitness competency may not be adequate for the job in question should develop a personal occupational fitness program.

This is particularly important for female workers or male workers of small stature going into trades-related occupations. Following is a list of steps to follow for developing an occupational fitness program.

1. Identify the physical requirements of the job.
2. Appraise your individual level of fitness.
3. Prepare a 20-30 minute individualized conditioning program which can be integrated into your daily schedule and which strives to improve the physical competencies required for the job.
4. Devise techniques to compensate for weak areas, especially stretching and breathing exercises to release tension.
5. Reappraise your fitness level regularly.

Academic Skills

UNITS

- Develop Study, Research, and Presentation Skills
- Develop Technological Literacy
- Overcome Math Anxiety
- Solve Mathematical Problems
- Examine Basic Physics Concepts

KEY IDEAS

- Effective study skills can be learned and practised.
- Writing a research paper is a set process with steps and procedures.
- Critical analysis of the social, technical and environmental factors is essential to the integration of new technology.
- Some people are humiliated or discouraged by teachers, parents, or fellow learners, and this creates internal blockades to learning, which can be overcome.
- There are many myths about learning and knowledge related to math.
- Math is essential to a wide variety of career options and can be learned at any age.
- The physical world operates on principles that, if learned, can assist us in our daily lives.
- Solving physics problems can be fun and interesting, can take a lot of thought, and maybe some research.

PURPOSE

Trades and technologies all require a certain basic level of academic achievement in communication skills, math, and science concepts. In the past, women have often been discouraged or left behind on the assumption that they would probably not have use for these skills. We now know that these are prerequisites to almost 85 per cent of possible occupations. If women are to succeed in broadening their career horizons, they must overcome any qualms they have that could keep them from attaining their goals. This topic provides training in the ability to study, workshops to overcome reluctance and anxiety in math and science, and some necessary upgrading for anyone who wishes to go on to further training in trades and technology.

REQUIREMENTS

This topic requires grade 10 equivalency, or a willingness and ability to obtain it, and a commitment to learn, explore, and do homework.

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Develop Study, Research, and Presentation Skills

LEARNING OUTCOMES

Upon completion of this unit, learners will have developed effective study skills, and be able to successfully prepare for and write exams and papers, and present research projects.

Note: Assessments need to be undertaken to ensure that learners have the basic academic skills to be successful in their studies, and to assist them to upgrade their knowledge if that is deemed necessary. To that end, assessment and upgrading tools for English language, writing, and mathematics are included in the resources section.

The Study Skills component of this unit is required; the Research Skills could be optional, depending on the emphasis of the course.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Research and apply the elements of effective study skills.	• Read Chapters on Time, Memory, Reading, Notes and Writing in *Becoming a Master Student*, or other Study Skills resource. Assign learners one to three "study buddies," and ask the teams to outline the five most useful ideas, and the ways in which the team might apply them.
• Demonstrate ability to use a wide variety of presentation skills.	• Have each team plan and deliver a presentation on these ideas using a variety of written and oral techniques and media.
• Demonstrate a knowledge of effective research skills using multiple sources and a variety of presentation skills.	• Using the format and steps suggested in the handout, "Writing a Research Paper," have learners form groups to complete a research project on a topic related to their interest area, which makes use of a variety of information technology sources and results in a multi-media presentation.
• Demonstrate leadership skills in group activities by persuading, compromising, and negotiating to resolve conflict, while respecting the opinions of others	• Evaluate projects using criteria such as: interest, effectiveness, format and content, variety of media accessed and utilized, depth of research and initiative.

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RESOURCES

College libraries have many resources for this topic.

Books and Articles

- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994.

  An excellent compendium and essential resource. See Managing the Requirements of Home and Work for review.

- Nelson Canada. *Study Power.* Toronto, Ontario: Nelson Canada. 1120 Birchmount Rd. Scarbourough, Ont. M1K 5G4. Ph: (416) 752-9100, Fax: (416) 752-9646. (approx. $380.95 Cdn.)

- MacFarlane, Polly and Sacha Hodson. *Studying Effectively and Efficiently—An Integrated System.* Toronto: Ontario Institute for Studies in Education. (OISE) 1989. ISBN 0-7744-0348-9.

  Short and sweet! The OISE catalogue has a number of excellent academic assistance titles.

- Randall, Nora D. *The Back-to-School Survival Guide for Women.* Canadian Congress Learning Opportunities for Women. Revised 1996. Distributed by Bonjour Books. Ph: 1-800-665-8002

  BC based information, but case studies cover a diversity of women who have overcome challenges common across the country. Newfoundland has also produced one of these.

- Santeusanio, Richard P. *Study Skills and Strategies.* American Guidance Service, 1988. Distributed in Canada by PSYCAN, PO Box 290 Stn V, Toronto, Ontario M6R 3A5. Ph: 1-800-263-3558. ISBN 0-89026-072-9

  Uses plain language and relational learning practices and exercises to assist in skill development. Examples relate both to technology and a diverse audience. Highly recommended.

- Santeusanio, Richard P. *Improving Your Study Skills.* Distributed in Canada by PSYCAN, PO Box 290 Stn V, Toronto, Ontario M6R 3A5. (See preceeding review.)

- Apps, Jerold W. *Study Skills for Adults Returning to School.* (Second Edition—Instructors Manual) McGraw-Hill Book Company, 1982. ISBN 0-07-002168-6

- Marshak, David. *Study Skills Program Level II.* The Study Skills Group of The National Association of Secondary School Principals, Reston, Virginia.

- Marshak, David. *Study Skills Program Level II.* (Revised Edition—Teachers Guide) The Study Skills Group of The National Association of Secondary School Principals, Reston, Virginia.

- Waters, Louise Bay. *Occupational Reading.* Belmont, California: Wadsworth Publishing Co., 1982. (trades and technology orientation)

- Hawes, Gene R. and Lynne Salop Hawes. *Hawes guide to successful study skills: how to earn high marks in your courses and tests.*

Software

- American Academy of Language. *TOEFL Mastery* (Test of English as a Foreign Language). Ph: 1-800-346-3469 or (301) 309-1400; Fax: (301) 309-0202.

  Aimed at English as a Second Language (ESL) developmental level, it is not a comprehensive piece. It is useful for practising for TOEFL placement exams, and for the price (approximately $159.00 US), it is a good value. (The ALA Lab System CD is approximately $2000.00 US and would be useful if the class were dedicated ESL learners.)

- Broderbund. *Algebra and Geometry.* (each approx. $79.95 US) Available in Canada through Image Media Services Ltd. Ph: 1-800-563-0777 or 1-800-665-6636. Up to grade 12 level.

RESOURCES CONT.

- Davidson and Associates. *Word Attack 3.* (approx. $39.94 US) Torrance, California. Ph: 1-800-545-7677.

  One of the strongest of Davidson's communications programs—words can be added; appealing and fun program modules; good reinforcement. A bit juvenile, but solid.

- Merit. *Writing Demons and Writing Style Demons.* (each approx. $89.00 US). Diagnostic Prescriptive Grammar (approx $199.99 US). Paragraph Punch (approx. $149.95 US). Ph: (212) 675-8567 or 1-800-753-6488; Fax: (212) 675-8607. Distributed in Canada by Insight Media Centre, Surrey, British Columbia. Ph: (604) 581-2420.

  Uses an editing format; good instruction for a "fun" type program; appealing graphics.

- Nelson Canada. *Study Power.* Toronto, Ontario: Nelson Canada (approx. $380.95 Cdn.)

- Stratford Learning Systems. *Skills Bank 96.* (approx. $2000 Cdn.) Vancouver, British Columbia, Ste. 201-176 W. 3 St, V6J 1K3. Ph: 1-800-660-1922; Fax: (604) 738-9766. (demo disc available)

  A bit dry, but a thorough Adult Basic Education package: writing, language arts, math, reading and study skills.

- *Typing Tutor 6*

  Widely available in computer resource stores

Films and Videos

- Ellis, David B. (author of Becoming a Master Student) Video recordings produced by College Survival Inc.

- Power process videos: *Be here now: #2; Love your problems: #3; You create it all: #5; Find a bigger problem: #11; Time management.*

- Ellis, David B. *Becoming a Master Student* [sound]: tools, techniques, hints, skills, instructions, examples, methods, procedures, resources, and suggestions for success.

- The *Eureka!* series. Available through college resource centres, AEMAC, some provincial educational media centres. (See also "Examine Basic Physics Concepts" unit for further information.)

Writing a Research Paper[32]

Why is a Research Paper Assigned?

Research is a method to allow you to explore and investigate a topic on your own, without your instructor giving you the information. Research begins with a question, and the paper describes your search for the answer. "Research papers are assigned primarily for one reason: to encourage you to participate actively in the learning process—to find answers to your own questions." (Marsh and Ricks)

The procedure for writing a research paper consists of the following ten steps:

1. Choosing a subject
2. Establishing a tentative thesis (a statement to be proved or disproved)
3. Identifying sources of information
4. Keeping a record of research
5. Taking notes
6. Organizing the paper
7. Writing the first draft
8. Editing the paper
9. Writing the final copy
10. Proofreading

Let's take a look at each of them.

1. Choosing a Subject

It may be that your instructor assigns you a definite subject, or you may have to choose for yourself. If you have to choose a subject, ask yourself the following questions:

- Is the subject I've chosen relevant to me and to the course?
- Can I handle the subject? Can it be written in the allotted time span? Is my topic specific enough? This last question is important, as it is better to go into some detail on a fairly specific subject rather than skim the top of a general one.
- Do I have enough information on the subject? Even a short paper should be based on five to ten works, so check your sources of information to make sure you have sufficient material.
- In general it is best to avoid certain subjects. For instance, steer clear of subjects that are not of interest to you, that are controversial, technical, or hard to investigate (because of a lack of material). Also, it is usually better not to write on biographies.

2. Establishing a Tentative Thesis

Your thesis statement should set out the subject you tend to prove or disprove in a single, specific statement. In your thesis, you are laying down the subject of your paper around which all your ideas and arguments will revolve.

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[32] This material has been adapted from *Writing a Research Paper* by Thomas F. Sawtell, College of New Caledonia, and from the Science and Technology 11 Instructional Resources Manual, BC Ministry of Education. Used with permission.

3. Identifying Sources of Information

The sources of information most readily available to you can be classified into three categories:

- Print- e.g., encyclopedias, dictionaries, almanacs, books, magazines, newspapers, pamphlets, directories.
- Non-print- e.g., filmstrips, videos, slides, audio-tapes, multi-media kits, CD-Rom, the Internet.
- Human- e.g., doctors, scientists, environmentalists, politicians, community workers.

The holdings of non-print materials will vary considerably from collection to collection. Some non-print resources such as radio and television newscasts, which frequently provide current information on many topics, may only be available when broadcast or additionally on the Internet. However, the following basic print materials will probably be found in most college or public libraries as both print and through CD-Rom and the Internet. As these publications are frequently revised, the publication dates have been omitted on the assumption that the most recent edition will be available.

- General encyclopedias:
    - The Canadian Encyclopedia / Collier's Encyclopedia / Compton's Encyclopedia and Fact Index / The New Encyclopedia Britannica / World Book Encyclopedia
- Magazines and their indexes:
  Access to information about magazine and journal articles is available on-line through such data-base services as DIALOG and BRS and by the use of indexes, for example:
    - Biology Digest [BD] / Canadian Magazine Index [CMI] / Canadian Periodical Index [CPI] / Reader's Guide to Periodical Literature [RG]
- Pamphlets:
  Companies, societies, government agencies, and special interest groups often publish pamphlets to promote their products or support their particular points of view. Those not available in the library's pamphlet file can be obtained by contacting the publishers.
- Almanacs and yearbooks:
    - Canada Year Book / Facts on File Yearbook / The World Almanac and Book of Facts

- Handbooks:
  - Famous First Facts/ Guinness Book of World Records / Handbook of Chemistry and Physics
- Atlases:
  - Atlas of British Columbia / The Atlas of the World
- General dictionaries:
  - Shorter Oxford English Dictionary / Webster's Third New International Dictionary
- Specialized dictionaries:
  - Roget's Thesaurus in Dictionary Form / Dictionary of Modern English Usage / Dictionaries of, for example, Biology, Chemistry, Engineering, Geology, Medicine, Physics, Psychology, Scientific and Technical Terms
- Newspapers:
  Local, provincial, and national newspapers, like television and radio newscasts, provide information on current topics of interest. While back issues are more likely to be found in public libraries rather than in schools, many school libraries do maintain files of newspaper clippings or subscribe to titles such as:
  - The Canadian News Index / Canadian Press News file / Canadian News Facts / Facts on File
- Directories:
  - Canadian Almanac and Directory Corpus Almanac of Canada / Directory of Services for Greater Vancouver / Financial Post Survey of Industrials
- The Internet:
  - Search engines, newsgroups, USENET discussion groups, etc. provide a vast array of potential sources of information.

When working with people, keep copies of any letters you write, state briefly and accurately what you want information on, and thank those that supply you with information. If you interview people, write or phone for an appointment and have a list of prepared questions to take with you. If you wish to record the interview you must check with the person first. In the interview, keep to the point and don't waste the person's time. Make sure you write a "Thank You" note afterward.

4. Keeping a Record of Research

As you select potentially useful materials from among those available, make complete bibliographic records (author, title, place of publication, publisher, date, and pages used), and add brief notes on the content and degree of usefulness of each item.

Shown here are two cards that present one way of recording both the bibliographic information (author, title, publisher, date) about a potentially useful source, together with notes on particular features of the publication.

Ashley, Richard, and Duggal, Heidi.

Dictionary of Nutrition. New York: St. Martins, 1975.
p. 90 leavening agents—yeast, cream of tartar, baking soda.

* Commercial food processors all use chemical leavening agents

Bunch, Bryan, ed. The Science Almanac. Garden City: Anchor, 198511986. Note p. 226

table of pH of variety of foods: eggs - 7.6 - 8.0

5. Taking Notes

Before beginning a more detailed look at potentially worthwhile materials, you should formulate and keep in mind tentative questions to be answered in your research paper. These questions will serve to direct the research and may be altered as you:

- skim and scan
- take notes
- evaluate the resources
- synthesize.

Skimming and Scanning

Skimming is a technique used to obtain an overview of the material, while scanning is used to locate specific information. To skim and scan you should:

- read tables of contents
- read titles and headings
- read topic sentences
- note key words, proper nouns, and dates
- examine tables, graphs, and illustrations.

Taking Notes

In taking notes, whether from oral, written, or visual sources, you should:

- record main ideas, outstanding examples, important conclusions, and specific details
- identify all sources accurately and include page numbers when appropriate
- include your evaluation of, and reaction to, what has been presented.

Evaluating the Resources

Critical thinking is one of the most important lifelong skills you can acquire. At the same time, it is one of the most difficult to learn. Key processes for the critical evaluation of books, films, presentations, articles, etc. are:

- inferring the purpose
- noting the authority
- assessing bias
- determining relevance
- checking currency.

As you identify your resources, ask:

- What is the source?
- What authority does the source have?
- What experience does the source have?
- What is the point of view of the source?
- Why is the point of view held?
- Are there other points of view?
- What is its target audience? (Is it published for a special interest group?)

At the same time, it is important that you check the facts and the references, and look for these errors in thinking:

- mixing up the real and fanciful
- believing that there is only one way to do it
- thinking that one example proves the rule
- confusing facts and opinion
- believing that one thing caused another because they happened together
- letting personal feelings and point of view hide some of the facts.

Finally, you must compare the authority and experience of the source(s) you are using with those of other sources (e.g., facts from various sources, point of view with other points of view).

6. Organizing the Paper

To organize your paper, start by taking a look at the information you have gathered and evaluate it. Does it support your thesis? If it doesn't, you may have to go back and collect more information. Also, take a look at your thesis statement and evaluate it in the light of the facts you have gathered. Is your thesis supported by the facts, or will you have to change it slightly?

Use the cards you have made and sort them into groups according to topics. They may fall naturally into groups—some supporting your thesis; some offering an opposite point of view. You may also be able to divide the groups into subsections, and a coherent pattern may start to develop. You may find some cards that do not fit the pattern. Set these aside. If there are any gaps in your information, continue to research a little more.

Use your card groupings to help you write an outline for your paper. In your outline, you should state the topics, the questions you intend to answer, and the ideas you plan to develop. Organize and list your supporting points.

There are three basic patterns you can use in writing your paper:

- i) Examples—make a point and give examples to support and explain it.
- ii) Compare and Contrast—two or more subjects can be presented in a way that shows how they are different or similar. This is generally done in a point-by-point format.
- iii) Division—the discussion is divided up into logical steps or units (e.g., periods of time, ideas building on previous ideas, or problems and solutions).

7. Writing the First Draft

Your first draft is really just an expansion of the information you have gathered, but in your own words (although you can of course use quotes as long as you name the source and page numbers in brackets). In your first draft, follow these steps:

- Write your introduction. Tell your reader what you are going to say. This is your statement of purpose or your thesis statement.
- Write the body of your paper. Use your groups of cards as you have arranged them in your outline. Discuss and prove your thesis. When you use quotes, make sure you introduce them; show omitted words with ellipses (...) and added words with square brackets [ ]; name the source and page number for footnotes, e.g., (Young, 25). Try to avoid bumpy or over-long sentences (if in doubt, read them aloud to yourself).
- Write your conclusion. Tell the reader what you have said and restate the primary ideas in brief. Restate your thesis.
- Decide on a title, if you don't yet have one.
- Let your paper sit for a day or so before you attempt to proofread it. This gives you some distance from it and lets you see it with fresh eyes.

8. Editing the Paper

Try to read your paper as if you are a stranger to it. As you read it, ask yourself: Have I made my point? Does my paper answer the thesis statement? Does it flow well? Do I use transitional words, such as furthermore, in addition to, or consequently? Do the ideas progress logically and are they relevant? Are the main ideas stated and supported by details? Can I shorten or tidy up any sentences? Do all my sentences have a subject and a verb? Do I repeat one word or phrase over and over again? If so, can I substitute a different word or phrase? Check for the following:

- Correct spelling and usage
- Correct use of quotations and footnoting
- Correct form of bibliography (check this with your instructor)

Finally, if possible, have somebody else read your paper and criticize it. Consider their suggestions and incorporate them.

9. Writing the Final Copy

If it is possible, you should try to type your final copy and keep a carbon copy, photostat, or computer disk for your own reference. As you make the final draft, follow this format:

Title page

- In the upper half, centred on the page, type your title in capitals. Beneath it type your name.
- In the lower third, type on separate lines, also centred, the course and section, your instructor's name, and the date.

Outline (if required)

- Head your page with your title, centred.
- State your thesis in one sentence.
- Present your outline—in topics or sentences, as your instructor specifies.
- If no outline is required, a table of contents is usual.

Text (pages are numbered in arabic, starting on page 2)

- Head the first page with your title (centred) and type your paper double-spaced. Any long quotations should be indented and single-spaced, without quotation marks.
- Follow the footnoting procedures required by your instructor.

Bibliography

- Head the page "Bibliography" in capital letters and centred.
- It is usual to arrange the works used in alphabetical order, with the author's last name first, and by the title when the author is unknown. After the author comes the title, place of publication, publisher's name, and date of publication.
- A new subsection should be created in the bibliography for each type of sources used (e.g., books, videos, newspapers, periodicals).

10. Proofreading

Reread your paper very carefully for errors in typing, spelling, punctuation, and capitalization. If possible, have somebody else read it, too.

Develop Technological Literacy[33]

LEARNING OUTCOME

Upon completion of this unit, learners will be able to: describe the elements of technology using a variety of approaches, demonstrate an understanding of the technical and social factors involved in integrating new technology, undertake a critical analysis of the implementation of new technology in specific circumstances, and evaluate and determine the level of their suitability for an aspect of the field.

Note: In many cases, instructors will be learning along with the learners. This is new material for many, and the process of discovery and discussion will enrich the learning experience. Design Portfolios tailored to each learner's style and ability can provide an important interactive process for instructor and students alike. They can evaluate learning and identify knowledge and process gaps. A Portfolio can include research and investigation; idea generation; flow charts for development and planning; testing and evaluating solutions.

Specific Learning Objectives	Teaching/Assessment Strategies
• Define Technology	• At the beginning of this unit, ask learners to write down questions related to the term, technological literacy, that they hope will be answered. Use their questions to focus some of the direction of the unit. • Read Handouts # 1 and 2. Ask learners (homework symbol) to compare and contrast the approaches taken by the two authors. Can they identify the biases in each? What are the messages being communicated? In what way can they use the information provided? Have them come prepared to represent their ideas in a class discussion. • Using Handouts #1, 2 and 3, ask learners to form study groups to develop a definition that describes both the product and the process of technology. Assign each group an aspect of the Technological system, as described under "Goals" in handout 2, for development in a class presentation. Presentations should include audio/visual aids, the process and product of technology in that sector, and highlight the occupations needed to reach the final product.

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[33] This module was developed for WITT National Network by Marcia Braundy, Journeywomen Ventures Ltd. Some of the practical design exercises in this unit were adapted from the drafts *Applied Skills K-7* and *Technology Education 8-10*, Integrated Resource Packages, Province of British Columbia, Ministry of Education, Skills and Training, 1995, and it is used with permission.

Specific Learning Objectives	Teaching/Assessment Strategies
Analyze the technical and social factors involved in developing and integrating new technology.	Ask learners to read and discuss "Women and Indigenous Technology," "Cappuccino, Community and Technology," "Toward Feminist Science Teaching;" and " Participatory Design by Non-Profit Groups," from the Winter 1993 issue of *Canadian Women's Studies*: "Women in Science and Technology: The Legacy of Margaret Benston." - What do these articles say about the participation of women in the design and development of new technology? - What considerations must be addressed in the development and application of new technology?
	Have learners, after reading the Handout #4 example on the postal system, determine which criteria were used to make the critical decisions, and what qualifiers might be missing from the list of criteria (Handout # 2) that would have enabled a more people-centred decision. Discuss as a class.
	Review the section of Handout #2 on "Criteria." Based on the material read thus far, and class discussion, encourage learners to determine whether the efficiency criteria provides sufficient grounds for evaluating a particular technological system. What is missing? What is the impact of leaving those out? What can be added to the list to change the outcome?
	Choose several items from home, industry, or around the classrooms. List the types of material, and the tools and processes used to create it. Using "the taxonomy of impacts" and the "Impacts Classification Matrix" from Handout #2, input information about the products on the board. Ask learners in different small groups to evaluate the efficacy of the products, and to define what efficacy means in that situation.
Investigate the steps required to design and bring a product or process to the consumer.	Create a web that depicts the action from concept, through design and development, to the completion of a project using technology to solve a community problem. Ensure that all systems involved are represented. What occupations would be needed to develop and complete the project? What questions need to be asked, at which points? Ask them to evaluate their own participation in the process.
	Ask learners to carefully examine the circles for "production" and "control" from Handout #3, and analyze what resources and processes would be needed to create the objects listed, and examine the "footprint" that it would create. What are the trade-offs? Ask them to write briefing notes to justify a decision to go ahead with development of a particular product, or to shelve it.

Specific Learning Objectives	Teaching/Assessment Strategies
	• Have learners bring to class and present positive and negative examples of the introduction of new technology. What values are used? What other values might have been applied to bring them to a different decision?
	• Create another web that depicts a process to find an application for a newly developed technology that was a spin off from another product development (e.g., post-it notes were a by-product of a completely different research and development initiative.) Give other examples. Ask learners to answer the questions: Who would be involved in the design process? What questions must be asked? By whom? What sequence of steps would be required to bring it to production? To market? What would be the patenting process?
• Complete a variety of design and development processes.	• Have learners work in small groups to design and build a complicated device that performs a simple task, using Lego/Dacta, and found materials.
	• Lead a class discussion to formulate a set of design criteria for an underwater marine research station. Divide the class into teams that will each work on separate part of the systems needed; and prepare an overview plan which includes all component parts: - communication - environment - transportation - resource management - emergency Teams must present and receive approval for inclusion in scale drawing of the overview plan.
	• Ask learners to work with a partner to design and construct a model for a shelter that will withstand a particular climactic condition. Evaluate the model in terms of efficiency, effectiveness, cost, and environmental impact.
	• Lead a class discussion on ways in which technology can assist learners with disabilities. Have class work in small groups to research existing devices, interview people with disabilities about their needs for assistance, and design solutions for particular disabilities.
	• Ask them to be prepared to answer questions such as: What are the strengths and weaknesses of your design solution? What potential societal and environmental impacts - both positive and negative- does your solution contain? What new problems have you identified? How would you address these in the future? How has this technology affected the number and kinds of jobs available?

RESOURCES

Books

- *Applied Skills K to 7 - Technology Component. Technology Education 8-10.* Applied Skills IRPs. Province of British Columbia, Ministry of Education. Integrated Resource Package 1995/96.

  This material is filled with interesting simple and complex activities to increase the technical skills and understanding of learners while also addressing social and environmental impact issues. Contains many audio/visual, print and hands-on resources for exploring technological problems and solutions. It has an excellent Assessment and Evaluation section that examines cooperative learning situations and group work, as well as Design Portfolios

- MacKenzie, Donald, and Walcman, Judy, eds. *The Social Shaping Of Technology.* Philadelphia: Open University Press, 1985.

  An excellent anthology covering significant historical and social factors in the introduction and development of technology. Of specific interest are articles by Ruth Schwartz Cowan, Cynthia Cookburn, William Lazonick, David Noble, Jane Barker and Hazel Downing, and Moyra Doorly.

- Myers, Dr. Norman, Gen. Ed. *GAIA - An Atlas of Planet Management.* New York: Doubleday/Anchor Books. 1984. Revised and Updated 1993.

  An extremely readable, wide ranging and far reaching description of land, ocean, elements, evolution, humankind, civilization and management issues within the context of what the issues are, what the concerns are, and what might be done to deal with them effectively. Technical and accessible.

- Skull, Dr. John. *Key Terms in Technology Studies.* Aukland, New Zealand: Elbrook Press. 1990. PO Box 51428, Pakuranga, Aukland New Zealand. Available from New York distributor.

  From pickled to pixelate, ergonomics to extrusion, honing, flange, to thermodynamics, this book describes with words, photographs, demonstrations and graphics, the concepts, origin, meaning and associations of 264 pages of terms that can be related to technology studies. A unique and extremely useful resource. Well worth the high price.

Films and Videos

- *Inventing Women.* VHS, 27 minutes. Ectobicoke, Ontario: Women Inventor's Project. 1988.
  1 Greensboro Drive, Ste 302, Etobicoke, On.
  M9W 1C8.

  An overview of an inventing workshop and interviews with women inventors.

- *Career and Technology Studies.* VHS. 15 min. each. Access Network 3720 - 76 Avenue, Edmonton, Alberta T6B 2N9
  Ph: (403) 440-7777 Fax: (403) 440-8899

  A series of eleven videos.

- *Now The Chips Are Down.* BBC, 50 minutes, 16 mm/video, 1978. Available through AEMAC and other provincial media resource libraries.

  A classic and still useful film documenting the development and some effects of technology. Looks at information access in law libraries, and the changes in production at the Los Angeles Times. Still one of the few and best resources available.

- *Shift Change.* NFB. VHS, 56 Minutes. 1986. Jefferson Lewis, Director and Script.
  Ph:1-800-267-7710.

  Looks at the introduction of the microchip into the steel industry in Canada.

- Canadian Auto Workers. *Working Lean.* 1993. VHS, 58:32 min. Toronto: Canadian Auto Workers. Ph: (905) 495-4110 Fax: (905) 495-6552.

  An examination of the implementation of "working smarter" and the introduction of new technology. Looks at the impact on workers, health and safety, social organization of work etc. Union perspective, with room for discussion.

RESOURCES CONT.

- *The Two Edged Sword: CAW and the New Technology.* 1993. VHS, 25 min. Toronto: CAW.

  One of the few films on the introduction of new technology. A balanced look at the pros and cons of a variety of technological change across the industries covered by the Canadian Auto Workers: auto manufacturing & parts, transportation (air/rail), etc. Highlights the importance of worker input at early stages to ensure success.

- *Making the Most of Things.* 1994. VHS, 26 min. Vancouver: Moving Images. Ph: (604) 684-3014.

  Features the life of Elizabeth Gale, and 81 year-old furniture maker from Newfoundland. Completely self-taught and using just a few tools, she developed her own style of folk art furniture.

- *A Design Project - Case Study: Four Responses to a Design Brief.* VHS, 32 min. Australia. 1994. Burnaby: Classroom Video Inc. Ph: (604) 420-3066. (approx. $69)

  Explores questions in contemporary design using the camper trailer as the example. Architects from around the world were commissioned to create innovative designs for discussion; manufacturers produced working prototypes.

- *Fluid Power at Work.* VHS, 23 min. Ontario: McIntyre Media Ltd. Ph: 1-800-565-3036 (approx. $145)

- *Manufacturing Processes; Manufacturing Resources; Manufacturing Systems* 3 videos. 17 min. Ontario: McIntyre Media Ltd. Ph: 1-800-565-3036.

  Processes illustrates casting and moulding, forming, separating, conditioning, assembling and finishing. *Resources* looks at the requirements of manufacturing systems, materials, human resources, capital, etc., exploring renewable and exhaustible raw materials, industrial materials and engineered materials; *Manufacturing* looks at systems, tools, equipment and workers, comparing strengths and weaknesses.

Multimedia:

- *The Way Things Work.* CD ROM. Concord, Ontario: Irwin Publishing. Ph: (905) 660-0611.

  Interactive on technological topics with a variety of levels.

- *Lego/Dacta Simple Control Activities; Early Simple Machines; Manufacturing Systems.* LEGO Canada Ltd. Ph: (905) 887-5346.

  Resource packages with building kits, teacher's guides, colour coded activity cards etc.

Internet:

www.educ.sfu.ca/gentech/hotlist.htm

Women changing technology changing women

by **Elaine Bernard**

The question I was asked to venture into was, "Will women change technology or will technology change women?" Yes, yes, yes, a thousand times yes. There is a problem when we start talking about technology, a problem of definition. Think about a situation in which some economist, who is a person who knows the least about the economy, explains inflation. By the time he or she has finished explaining inflation, you think it's like that commercial about the "White Tornado." Remember that one? The White Tornado came through the house and zip zip zip — the house was spotless. Only in the case of the economy the White Tornado goes through the grocery stores and everything goes up in price and it is magical like cartoon-land.

What that person is doing is mystifying economics, making it sound like there is a weird phenomenon out there called the economy, probably centred somewhere on Mars, and every now and then the Martians drop something on us. Bam—unemployment. "Well the economy just brought down unemployment." Damn, if we can find this sucker 'the economy,' we'll wring his little neck. And what the economists are trying to do, is to remove these concepts, make them sound so bizarre and so difficult to understand that we ordinary human beings could never try to do anything about them. And precisely the same sort of thing is happening around the concept of technology.

Defining technology

So I always start any talk on technology by defining it. The easiest way to define anything is to go to the dictionary. You open up the dictionary and you understand what a dictionary is really good at—telling you how to spell something, not defining something. It says, "The practical arts in total." This is brilliant. Or it says something dumb like, "Applied science." This is an English teacher's idea of a definition because now you must look up science—which will say something like "the root of technology, the intellectual and...."

Obviously, the best way to define technology is to make up the definition yourself. So, that's what I've done, and I have been getting away with it for a number of years so it must be right. "Technology is the means and processes through which we as a society produce the substance of our existence." It's a sneaky definition. First it goes on for three lines, so it has to be good. But secondly, it puts people collectively together—society at the centre of technology. And that, I think, is one of the more important lessons. I then further define it into five things: tools, materials, energy forms, techniques, and organization of work.

Now, tools most of us are familiar with here. Certainly here. We've always thought of technology in that way. Whether it's computers, or robots—the most recent advance in the articulating arm of a computer. Hey, that's all a robot is, it's a tool. But as women we have thought of hand tools—how to operate hand tools. At different times in history we have even talked about an age by the invention of a specific tool. Tools are easy, that's technology, you've got it.

What about materials? Now that's a trickier one. I remember the first time I had to teach for the plumbers. Truly an experience. "Ah,..." they said, "Well, come on, you can come down and teach us about technology. Ha ha." Then they said, "We can now work out the length of pipe by using a hand-held calculator. I guess that's tech change. Ha ha."

I said, "Hey jerks." Plumbers like the direct approach. I said, "What's happening to your apprentice program?"

They said, "Yeah, well, you know..."

I said, "Do you think maybe it's got just a little to do with the materials you're using? Remember the good old days when plumbers were real plumbers and they carried metal? What's this plastic stuff you're playing around with nowadays?"

I said, "That's tech change you know, that's revolutionizing plumbing and it doesn't even come in computer boxes."

And they started to think about it, and they thought about how plumbing is changing massively because of a change in materials. The way you bond metal versus plastic has substantially changed the job, has even changed the number of apprentices you meet on a job site.

Because in the old days, as those of us who have been through apprenticeship know, apprenticeship training was thinly disguised as a teaching methodology but it was really a way of getting a cheap grunt. "Here, hold this."

"What will I learn by that?"

"To Obey the Craftsman."

Oh well, it's an important lesson.

Tools, materials, energy forms. In the past, we've even defined ages and revolutions in technology by energy forms. The Steam Age. Was this some British plot to sell tea around the world? No, there was steam before the steam age and after. It was harnessing steam as an energy form that made the difference.

Techniques. Ways and methods of doing things. Organization of work. And that, by the way, is the most important aspect of technology today.

Revolutions in work organization

If you think back to the turn of the century, you'll see that we went through a technological revolution in work organization. We moved from craft production that was people-centred with the craftsperson in charge, to assembly-line production. It wasn't that on an assembly line you made inferior products, but that the very method of mass production removed the knowledge from the worker and put it into management, where it was lost forever. By the very nature of the way the work was organized, the workers' knowledge was limited, and yet they were still able to produce more and more complex machinery. That was an organizational change.

"Will technology change women? Of course it will change women. Of course it has changed women."

If you want to see some of the changes, the real changes, don't watch the lights and buttons in the computer age. If you're watching them you're missing the real fundamental change. In the computer revolution the real change isn't the lights and the bells—it is, in fact, the organizational change.

How can women change technology? First of all, if you're going to do it you have to be there. You can't do it from the outside.

Today we are going through a massive technological revolution. Our world, we technologists would say, is being reconfigured. It's being redesigned. Will technology change women? Of course it will change women. Of course it has changed women.

More often than not we've been the victims of technology—from the numb-bum designs that fit fictional, statistical, average persons as if there were not the wonderful diversity of shapes and sizes that characterizes us as humankind; to our current medical practices in reproductive technologies, treating pregnant women as if they were merely an environment within which the fetus grows. It's a whole new field of study—woman as the environment upon which the fetus grows.

If you think about it, look at the very birthing process in hospitals. It is marvellously machine-intensive— machines that put women in the correct position so the doctor will be comfortable. Now that's progress —if you're a doctor and you're worried about your back. If you're a woman delivering, you may have a different perspective.

Need we be victims of technology?

We tend to be the victims of technology. What maintains us in this victim's position? Well, I have three factors. One is the belief

204

that technology is progress, that it is unbiased, that it's neutral, that it's inevitable. Second is the lack of concrete experience and knowledge of science and technology. And third is the lack of reasonable alternatives. Hell, even unreasonable alternatives, I'll try anything. Let's look at each one of these in its turn.

Technology is progress. Well, that's an article of faith. One that many of us have started to abandon. Technology, in order to be progress, must be measured by a human measure. We see endless potential for technology, but the reality is leaving us far behind.

Look at the reality of help for the disabled. That's one of the most exciting aspects of technology today. But look at how many people you still see who are physically disabled and who are still running around in wheelchairs that haven't changed in their fundamental design for 50 years. Where is our technology there? Where is it when it comes to occupational health and safety for workers? Where is it in women's health? Where are we seeing this technology serving the needs of you and me? We're not. It's not progress, not by our measures. It must be and it can be if it meets our needs. If it doesn't—forget it.

Technology is unbiased. You know, there is a mental process you go through when you read a book. You say, "Well, this author has a bias, and I recognize his or her bias." And you can think critically about that book—accept or reject its author's premise. But if that same nerd puts on a hard hat, calls herself or himself an engineer and, instead of writing a book denouncing unions or women, creates a machine that does the same thing... oh well, that's objective, I mean ooh that's technology. Was it designed to imprison me? Oh no no no, it's simply answering the demands of physics. Nonsense! That's nonsense. Absolutely nonsense.

Technology is inevitable. If there are no other alternatives, yes, it is inevitable. But choices are tricky things. For example, if I were asked to vote on a choice between light, cheap, rapid mass transit versus the individual car, I'd probably go for the rapid transit. But it doesn't appear on the ballot, and it's not really available. The whole system is configured for individual car ownership. Choices, real choices, are disguised. They are not there. Often non-choices are seen as inevitable. "That's the way it had to be, there was no other choice."

Frequently human decision-making is hidden by making it look like a machine or technological imperative: "The computer can't do it." What a line, eh? That's a short way of saying the truth—the people who designed this computer don't want to let you do this, therefore they have purposefully designed it to exclude that possibility. But if anyone said that, you would say, "Then maybe we should change those people." They don't want you thinking that. It's much better if you say, "The computer can't do it." Or, "We can't afford it,"—that's another great one. We can't afford pay equity. We can't afford employment equity. We can't afford whatever. Well it's damn funny how we can afford submarines. Damn funny how we can afford all sorts of things the government wants to do. It's damn funny how during WWII, we could afford childcare.

Now if you think about it, that's the way the system works, as if things are inevitable, as if there are no choices, as if you've just got to accept it.

"If you think about, it since the dawn of civilization it was women who first developed in hunting and gathering societies: agriculture; animal domestication and husbandry; healing and medicine; construction — the building of shelters. Almost all the practical arts were first developed by women."

But we don't accept it. If you as electricians were using a multimeter or voltmeter, and you plugged it in, testing lines, and it couldn't register current properly, you wouldn't say, "Well, that's the way the system works, guess we just have go with it." You wouldn't. You would say, "Junk this crap, give me one that works! Give me an adequate tool that meets my needs." Well, I would suggest in many walks of life, we have to start saying, "Junk this crap, give me something that works, something that meets our needs."

The need for knowledge

That leads us to the second problem: lack of concrete experience and knowledge of trades and technology. That is, do you have sufficient experience and skill to say, "Bullshit"? Because we are always being faced with someone saying, "Well, that's the way the machine works, there is no other alternative, that's the way it has to be."

Now, as a humanist, you can cry all you want, you can say, "Well, you know, I wish it were a friendlier world, where people got along better. If we would all just pull together...." And that's good, and if you do it well, and it's grammatically correct, you may even get a job teaching English Literature or History or something. But you're not going to build the world where people cooperate, where they see alternatives, because to do that you must have the tools necessary to do that construction. And that means literacy, and knowledge, and experience in science, technology, and trades, because that's where it's at. Without it you will always be the victims of other experts.

How can women change technology?

Now the third thing I mentioned is a lack of alternatives. I would like to focus on that and the process of starting to think about feminist trades, and feminist technology alternatives.

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How can women change technology? First of all, if you're going to do it you have to be there. You can't do it from the outside. You can't say, "Well, it would be real good if somebody would fix it this way for me; call up a tradesperson, get her to fix it." You have to be there in it.

I agree with Kate Braid, for instance, who said earlier, she doesn't like the term non-traditional work or jobs for women in trades or technology. If you think about, it since the dawn of civilization it was women who first developed in hunting and gathering societies: agriculture; animal domestication and husbandry; healing and medicine; construction—the building of shelters. Almost all the practical arts were first developed by women. So when we demand mandatory affirmative action programs, don't get defensive. Don't apologize. We're following the finest of union traditions. We're merely asserting our collective seniority. We were there first and we're coming back to claim our due. We are reclaiming our traditional work, if you take a long view of history.

The nice thing about being a woman (you probably don't view this as being a super great thing) is that we are always on the outside of the inside. You know what I mean? Like, okay, you finally made it. You busted into a so called "non-traditional" area. You've done it. You are now a scientist. You are now a technologist. You are now a tradeswoman. And you walk into a group of scientists, technologists, or tradespersons and everybody outside is saying, "Ooh, she's one of Them, she's one of those experts." And you sit in that room of experts and they're going, "It's a girl." Because you're still on the outside of the inside track. You haven't made it. Because we stick out, we're different, and no matter how much we fake it, no matter whether we dress one way or another—or streak through the meeting—we will always be outsiders on the inside track.

Well that's easy for us, because if that's the way we are going to play the game, then it's very simple, we are going to change the rules.

So, you have to be there, and secondly, when you are there, you have to work for change. Because if you allow this brotherhood to stay together, they're going to do you in, they're going to do me in, they're going to do themselves in. They're so dumb. So what we must do, being on the inside, is fight for change. Because otherwise we can't survive. We know we can't walk around saying, "I'm okay, Jane, you know I'm a craftsperson." The crafts are in crisis. Technology is in crisis. Science is in crisis. And I think part of that crisis is the inhumanity, the dehumanizing nature of the new technology currently being designed and configured, the attempt to make victims of all of us. And within the context of that crisis, there is no individual strategy that will work. I cannot say to myself that somehow if I get to be the best scientist within this particular area or technology, then I can keep my head down and I'll be safe. What we're talking about right now is a global crisis and it requires collective action to change.

The third step: work toward alternatives. New options. Technology that puts people back into control. This is not currently a design prescription in most technology. You may have picked that up. It is not human-centred technology. It is not a method I teach which is called "User-Driven Design." I came up with the term because if you walk into a group of engineers and say, "I'm here to talk to you about workers' control," they freak out. But if you come in to say, "I'm teaching a new design methodology called User-Driven Design," they go, "Was this on the exam, man?" So I do whatever it takes.

The one thing we do know about design and about the cycle of design is the earlier in a design cycle you put in your needs and options, that is, the better they are defined at that point, the better your chance of success towards the end.

"The one thing we do know about design and about the cycle of design is the earlier in a design cycle you put in your needs and options, that is, the better they are defined at that point, the better your chance of success towards the end."

Let me give you a really straightforward example—access for the disabled. There are two ways of getting access for the disabled into a building. One is to ignore the disabled the way we normally do, and say, "Well, the hell with them. With any luck there aren't enough up here to really raise hell, and if they do, they're poor and don't carry much political weight. So, we'll just build the building the way we wanted to." And at the end of it some sneaky disabled person gets together with some other people and they start going to political bodies and raising a stink. And now you have an expensive proposition —called tearing apart a building that was designed with no access for the disabled and all of a sudden trying to give them access. Give them access, right? That is one way of doing it. That is costly for all of us taxpayers. It's costly even for the stupid company that permitted such a design to be accepted.

A far more exciting way of doing it is to legislate access for the disabled in every building. That shares the cost out so no company gets a competitive advantage. Everybody has to do it. It's sort of... it's natural as the rain. And when that demand is made, you unleash tremendous creativity. It means at the planning stages you incorporate a creative way of access for the disabled. It's cheap to do it then; it means four or five hours of the architect's time. And it's part of the plan for the building. It doesn't add to the cost because it was designed to be accessible to everyone and everyone means the disabled. Everyone means Every One.

So you add your needs and options to your design from the very beginning. It costs less and it releases creative possibility. We've got a creative crisis here. In the long run it will be cheaper.

Fourth: we work democratically. One thing I believe is happening in our society, is that we are being disenfranchised through the mystification of technology.

Women are great demystifiers; our bullshit quota is very low. That's why sometimes women don't speak up at conferences. You must have noticed that often when you're at mixed conferences, the guys get up and repeat each other. And the women there just don't have the level of bullshit to do that. They just want to get on with it and do what needs to be done. This is very useful in a design sense because, what we want to do is demystify. We have no ego tied into making something look more difficult to enhance our personal stature. We have much more interest in trying to explain it simply enough to build up the support of the majority of the people to make sure it's actually done.

That's what I mean by starting to work democratically. Open doors for others. That's what some of this conference is about. Not just feeling good about the gains we've made, but now that we've kicked open the door, being able to yell to the rest of the sisters, "Come on in!"

And why are we going to do that? Because there are two strategies. One is to run around and say, "I'm Jane, I'm the only one in my workplace who's female. I'm the token Queen Bee." But that doesn't last long and you don't get anywhere. Far better to be the senior woman who kicks open doors to let the others in, and then together as a gang to start changing the place.

And when we do that, we discover some of our brothers who never ever used to identify themselves to us—they were the ones who sat in the back and couldn't put up with the bullshit either. All of a sudden they start saying, "You know, I like this, okay, you keep doing that." And they are on our side. You find that all sorts of guys that never spoke up in meetings before are on our side. For the first time they're interested because they see some of the creative possibilities coming out. It's opening the door, not just for women, but for people of colour, disabled, aboriginal people. Not just out of some sort of moral posture—not that I think it's wrong to be in favour of all these things—but out of our own enlightened self-interest we have to do that.

Because that is the diversity of our society. And technology, real technology, like society, thrives on diversity. It becomes stagnant with homogeneity. When I see the little engineers running

209

around with their identical briefcases, their identical calculators, I feel sad about our society. Because what we need is diversity. What we need is people who will challenge our ideas and think about things differently. Trades need that. Science needs that. Technology needs that.

Finally, work cooperatively. Now that's important. One of the problems in technology today, if we look at some of the new fields like technological assessment or environmental impact studies, is that historically our disciplines have taught people to become the world's expert on the narrowest version of their discipline. But most of the problems we're facing today aren't as simple as phoning a plumber. They're far more complex, so you need a team of people who haven't been trained to, "my methodology is the only correct way to look at this problem." Women have traditionally and still have great communication skills and far less ego tied up in their methodology. And what today we need to solve a lot of our problems is teamwork, is working together in groups with different disciplines.

"So here's a bunch of beer workers sitting down with a bunch of environmentalists, and discovering for the first time in their lives that they actually have a whole lot in common."

The fact we could put together a conference of trades and technologists and scientists, and not have people say, "Well, you know, I'm really a scientist, I mean, you are a technologist, I'm a scientist, you're a tradesperson,..." is a particular strength we as women have.

My grandfather was a tool-and-die maker and he maintained that was the cream of the craft. He used to put down my other grandfather who was merely a plumber. But now you know the thinking must be, "We need them all." To work together in any site whether it's collectively, cooperatively, is something that we have to do today to solve some of the problems of society. We also need to start working on a technology that will meet the needs of the end-user. And the voice of the end-user has to start appearing in our work sites. We've got to start raising the issue of "and what does this lead to?" as citizens as well as tradespeople or scientists or technologists.

Some inspirational examples

Let me end with a couple of really fast examples. In one of my various incarnations, I was a historian for the brewery workers. (It was a marvellous job.... If you ever want to study work, study beer-making—the fringe benefits alone are worth the study.) I chose the beer workers as an example of the sort of change some workers are going through, some of the exciting changes.

First, brewery workers are not your crunchy-granola trade unionists. They're not usually considered the "intelligentsia" of the labour movement. They do not pride themselves that way.

They are in the private sector, and they're in a highly competitive industry. They have identified completely with their employers until very recently. If you go outside of a beer plant you will not see union jackets, you'll see Carling O'Keefe jackets. You'll see every beer company jacket imaginable and all sorts of beer paraphernalia, as they say at the border. But you will not see a great union identification. Well, recently they were challenged with technological change. The company started to bring in canned beer. And the brewery workers realized that canned beer was going to be devastating for them. It takes 30 brewery workers to staff a bottle line; it only takes eight to staff a can line. And they started to think about what canned beer was going to do to our universal recycling system. Which is absolutely destroy it, because, even though in theory cans are recyclable, they come in those weird sort of plastic things, that nobody after one or two beers can get back into the plastic.

What they did realize was they couldn't just shut down the plant, their traditional industrial strength wouldn't carry them through. So they started to think, "Who else, other than beer workers who are going to lose their jobs, who else would care if we switch from bottles to cans?" They started to think, "Well, bottle-makers." And then they discovered a really weird group of people that good beer workers would never talk to. Environmentalists. And they discovered the environmentalists had been fighting against canned beer successfully in the United States. They could show a majority of roadside litter in the States is beer cans, and that in the U.S. they have destroyed the universal recycling system. So here's a bunch of beer workers sitting down with a bunch of environmentalists, and discovering for the first time in their lives that they actually have a whole lot in common.

For the environmentalists it was scary—beer workers like to be scary. But the beer workers found the environmentalists even more scary. For instance they kept calling everybody "Doctor This," "Doctor that," because everybody knows an environmentalist is a Doctor of something—I don't know... Doctor of Birds.

But eventually they discovered they had a whole lot in common and in fact they had tremendous strength through the public. Then together the environmentalists and the beer workers started a campaign called "Glass is Class." They discouraged people from buying canned beer by all sorts of wild and wondrous means. My favourite is, "Don't drink your beer out of a can, you don't know what's in it." It works! Particularly after a couple of beers.

But this is what was really exciting. Think about what is happening intellectually here. What is happening is the producers who are the beer workers and for many years have identified completely with the company, are now realizing they are also part of the consuming public. They also live in the environment and maybe, maybe, what is good for them as consumers at home should be what is good for them as producers.

And maybe they have to start seeing we can't live one world at work, throw down our helmet or throw down our hat, and go and live a different world at home. It doesn't work that way.

So to see a group like the brewery workers, and I chose them because they're private sector and because theirs is not a group that has historically had a great social conscience, begin to think that way is very exciting. And you know they have been fairly successful. I mean they haven't won the world. There still is canned beer, but I know nobody here will ever drink canned beer again.

"One of the most exciting things is women getting back into technology. Returning to our roots. And I think now that we are coming back, maybe we can start remoulding that technology so it starts meeting human needs."

What they have started to do is to think a bit about the environment. They are even starting to think just a wee bit about the quality of beer. And that's something I could really march in the streets for.

So, one other example, because there are a lot of people in the building trades here. I don't know if you know about the building trades in Australia. Australia is rather like us, a boom and bust economy, with weird politicians who have bizarre ideas about what to do. Every now and then, like us, they gut most of their city core—drop historic buildings, and pave over farmlands. People from BC will be very familiar with this phenomenon. People from Ontario will lament because you've already done most of it.

Well, a few years ago the building trades in Australia met with environmentalists, and with community groups, and they, the building trades, declared "green belts." Not the government, but the working people and their unions declared green belts. Sort of an agricultural land freeze with muscle. And they did it as building trades people, the people who actually do the work.

It's real hard to construct a building if nobody comes. If the teamsters won't drive the stuff to the site, and if the carpenters won't put up the forms, and if the electricians won't wire the place, you can't build the building. And when the building trades are united with the community saying, "We as a community demand that some of this agricultural and green space in our cities be saved, and we'll put muscle behind that demand by

212

telling you that's the way it's going to be," well, that's people's democracy.

It's also exciting for the trades because then when the trades come and knock on the people's doors for support, the people are there. And so that is the beginning of a sort of coalition and of a different vision of how we can use technology. We're there to change it. It is our servant.

If it's getting away from us it's nothing innate about the technology. It is our failure, it is our willingness to accept that we'll let other people do it.

One of the most exciting things is women getting back into technology. Returning to our roots. And I think now that we are coming back, maybe we can start remoulding that technology so it starts meeting human needs. You know the best way to predict the future is to create it. And if you look around this room, you'll see a core of women with the skills of hand and brain to start the transformation of technology and trades for ourselves, for our sisters, and for everyone.

This article originally appeared in* Surviving and Thriving: Women in Trades and Technology and Employment Equity *(M. Braundy, Ed. Kootenay WITT, 1989.)

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The Technology Systems Approach[34]

The systems approach is a mental construct that can be used to order, organize, analyse, and evaluate the operation of technological systems.

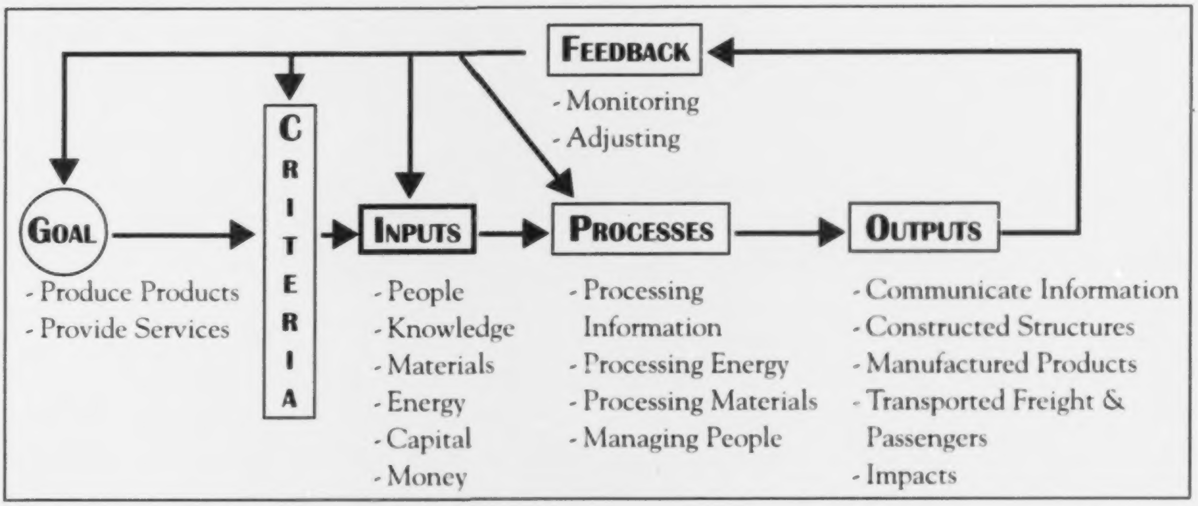
FEEDBACK
- Monitoring
- Adjusting
GOAL
- Produce Products
- Provide Services
CRITERIA
INPUTS
- People
- Knowledge
- Materials
- Energy
- Capital
- Money
PROCESSES
- Processing Information
- Processing Energy
- Processing Materials
- Managing People
OUTPUTS
- Communicate Information
- Constructed Structures
- Manufactured Products
- Transported Freight & Passengers
- Impacts

Figure 1. Modified version of the universal systems model

Goal

The goal is the desired result or outcome of an operating system. Each aspect of the technological systems (Communication, Construction, Manufacturing, Transportation, Power and Energy, Environment, Natural Resources, Research and Development) has its own unique, specific goal, but they can be grouped into two general categories: to produce products and to provide services. The specific goals of the basic technological systems are to communicate information and energy (service), construct structures (produce), manufacture products (produce), transport freight and passengers (service), and use, preserve, and revitalize the environment (produce and service).

Criteria

Criteria set the parameters of the goal of the system. There may be any number of specific criteria for technological systems, but efficiency seems to be a universal theme. Technological systems are always trying to improve their efficiency. Several examples of efficiencies for which technological systems strive are:

- economic efficiency
- energy consumption efficiency
- production productivity

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[34] This material was adapted with permission from "The Technology Education Systems Approach" by Stanley A. Komacek in the International Technology Education Association's *Integrating Technology, People and the Environment*.

- time efficiency (speed)
- ergonomic efficiency
- energy conservation efficiency
- safety
- distance efficiency

Inputs

Inputs, also called resources, to technological systems include people, knowledge, materials, energy, capital, and money. All of these resources are required for the operation of communication, construction, manufacturing, and transportation systems. People are the most important input to the system. "Without people, and their needs and wants, a [technological] system would not exist" (Snyder and Hales, 1981, p. 12). Each system of technology has its own unique body of knowledge. Technological knowledge is accumulating at an ever accelerating rate. On the other hand, many energy and material resources are being depleted at ever accelerating rates. Capital is defined as "the buildings, machines, tools, and equipment that are needed to perform the processes of the system" (Snyder and Hales, 1981, p. 12). Money is used to pay for all of the other required inputs. People are paid a salary. Energy, materials, capital, and even knowledge, can be purchased with money.

Processes

Processes are the actions, practices, or techniques employed in the system to change or modify the inputs. While processes are being performed, the goal and criteria of the system must be considered. Each technological system has its own unique processes, but they can be grouped into four categories: processing information, processing energy, processing materials, and managing people. These processes are generic to each technological system. System specific processes will be presented later.

Output

Outputs are the results of an operating system. The main outputs include communicated information, constructed structures, manufactured products, and transported freight and passengers. If these were the only outputs, technological systems would always provide the desired goal. In reality, there are often a number of ancillary outputs from technological systems. These outputs are considered impacts. Because of their importance in analysing the behaviour of technological systems, impacts are discussed in the next section.

Impacts

Webster's Third New International Dictionary defines an impact as "the force of impression of one thing on another... producing change". Impacts have been referred to as effects or consequences. They have been categorized in a number of ways: environmental, technical, financial, social, personal, physical, emotional, ecological. Social/cultural and environmental impacts are often used as two broad categories of impacts in technology education. In this paper, three broad categories of impacts are presented; technological, societal, and biological. Technological impacts are the changes created in one system of technology by another. The famous 'spin-offs' from NASA's space exploration research activities are a common example. Notice the inclusion of the "Other Technologies' category in the taxonomy. This category allows for an investigation of impacts on medical, military, biotechnology, and other technologies outside the four basic systems studied in technology education. Societal impacts are the changes technology creates in the societal institutions of family, religion, industry, government, education, and recreation. This must also include human/personal and financial impacts. Biological impacts create changes in biological systems (i.e., humans, plants and animals, and the natural environments).

IMPACTS

TECHNOLOGICAL	**SOCIETAL**	**BIOLOGICAL**
Communication	Family	Humans
Construction	Religion	Plants & Animals
Manufacturing	Industry	Land
Transportation	Government	Water
Other Technologies	Education	Air
	Recreation	Space
	Human/Personal/Gender/ Financial	

Figure 2. Taxonomy of the impacts of technology.

Specific impacts can be classified and analysed by the result of the impact (positive or negative) and its anticipated occurrence (expected or unexpected). The matrix in Figure 3 can be used for this classification activity and subsequent analysis. A quick review of the four blocks in the matrix reveals that the impacts of most concern would fall in the lower right hand box (NEGATIVE/UNEXPECTED). Of course any impact placed in the "NEGATIVE" would necessitate a trade-off decision. Trade-offs occur when people accept negative impacts in order to receive the positive benefits of a technology.

	EXPECTED	UNEXPECTED
POSITIVE		
NEGATIVE		

Figure 3. Impacts classification matrix.

Feedback

The two components of feedback are: monitoring the outputs of the processes, and making adjustments. Feedback mechanisms are used to make sure the outputs match the goal of the system while adhering to the established criteria. However, as the arrows exiting the feedback block indicate, the goal and criteria, as well as the inputs and processes, can be adjusted. Not all systems have feedback. Without feedback, a system is considered to have an "open-loop" operation and usually cannot be easily adjusted. Systems with feedback are considered to have a "closed-loop" operation.

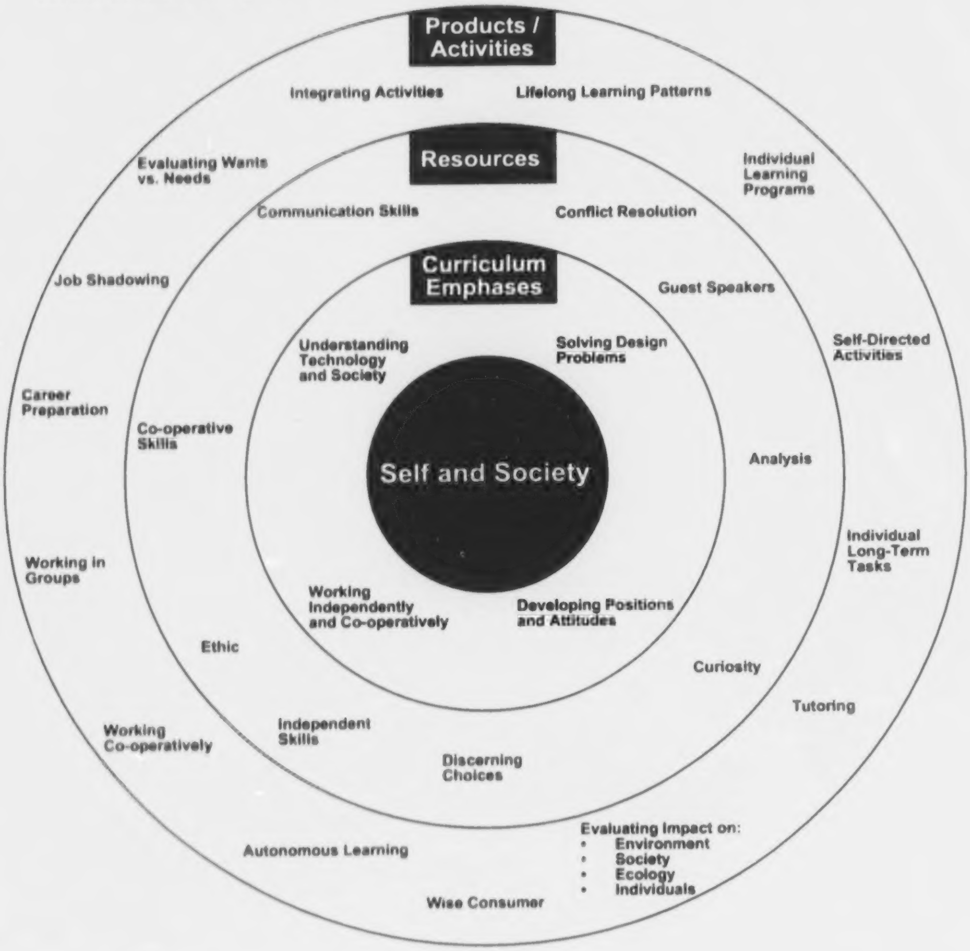
Handout 3

Technology Education Organizers[35]

Self and Society

Technology touches our lives every day. Students need to understand now humans shape technology and the impacts that current and future technologies will have on our society, culture, and environment. The prescribed learning outcomes emphasize:

- learning to solve problems involving technology
- the personal relevance of problems involving technology and the discovery that there may be several solutions to a problem
- developing positive attitudes toward lifelong learning and the integration and application of skills across areas of learning and technologies
- developing appropriate interpersonal skills and attitudes for working both independently and co-operatively within a group
- discovering how technology has changed society and the workplace


Products / Activities
Integrating Activities
Lifelong Learning Patterns
Evaluating Wants vs. Needs
Individual Learning Programs
Job Shadowing
Self-Directed Activities
Career Preparation
Individual Long-Term Tasks
Working in Groups
Tutoring
Working Co-operatively
Autonomous Learning
Wise Consumer
Evaluating Impact on:
Environment
Society
Ecology
Individuals
Resources
Communication Skills
Conflict Resolution
Guest Speakers
Co-operative Skills
Analysis
Ethic
Curiosity
Independent Skills
Discerning Choices
Curriculum Emphases
Understanding Technology and Society
Solving Design Problems
Working Independently and Co-operatively
Developing Positions and Attitudes
Self and Society

Together, the five curriculum organizers manage the content of technology education and are intended to provide direction for development of integrated units of study and the planning of instructional materials.

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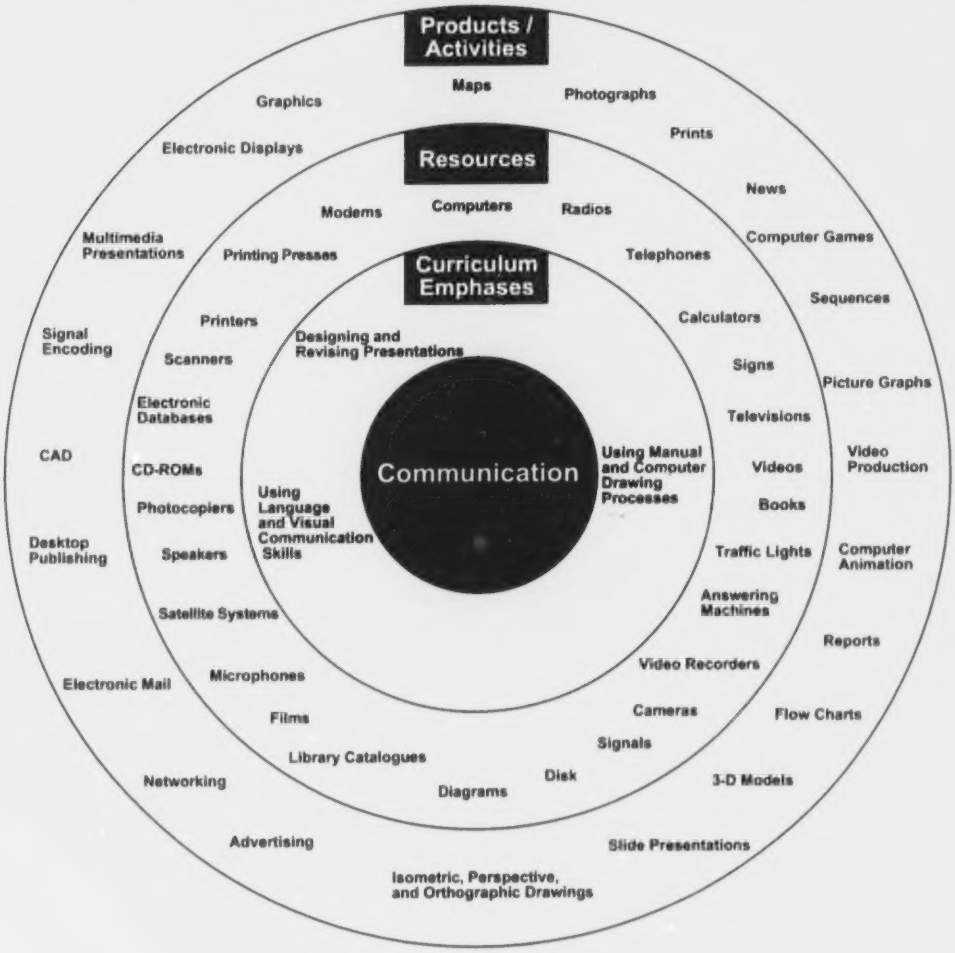
[35] From *Technology Education 8-10*. Victoria: Province of British Columbia. pg 5-10. Used with permission.

Communications

Images and messages can be sent instantly almost anywhere in the world, adding a global perspective to our lives. At home and in the workplace, students will need to use technology to process and share information and to communicate ideas using language and graphic forms. The prescribed learning outcomes emphasize:

- Using technology to access, store and retrieve information (although information technology is a separate curriculum, it is a major part of technology education)
- developing knowledge and skills related to accessing, storing, retrieving, and using information
- using manual and computer-assisted processes to present models and simulations in 2-D and 3-D forms to explain design ideas
- developing and using criteria to create and revise design presentations
- making use of skills, knowledge, and technologies from various curriculum areas to solve problems
- making responsible choices about the use of technology


Products / Activities
Maps
Photographs
Graphics
Prints
Electronic Displays
News
Computer Games
Multimedia Presentations
Sequences
Signal Encoding
Picture Graphs
CAD
Video Production
Desktop Publishing
Computer Animation
Reports
Electronic Mail
Flow Charts
Networking
3-D Models
Advertising
Slide Presentations
Isometric, Perspective, and Orthographic Drawings
Resources
Modems
Computers
Radios
Printing Presses
Telephones
Printers
Calculators
Scanners
Signs
Electronic Databases
Televisions
CD-ROMs
Videos
Photocopiers
Books
Speakers
Traffic Lights
Satellite Systems
Answering Machines
Microphones
Video Recorders
Films
Cameras
Library Catalogues
Signals
Diagrams
Disk
Curriculum Emphases
Designing and Revising Presentations
Using Manual and Computer Drawing Processes
Using Language and Visual Communication Skills
Communication

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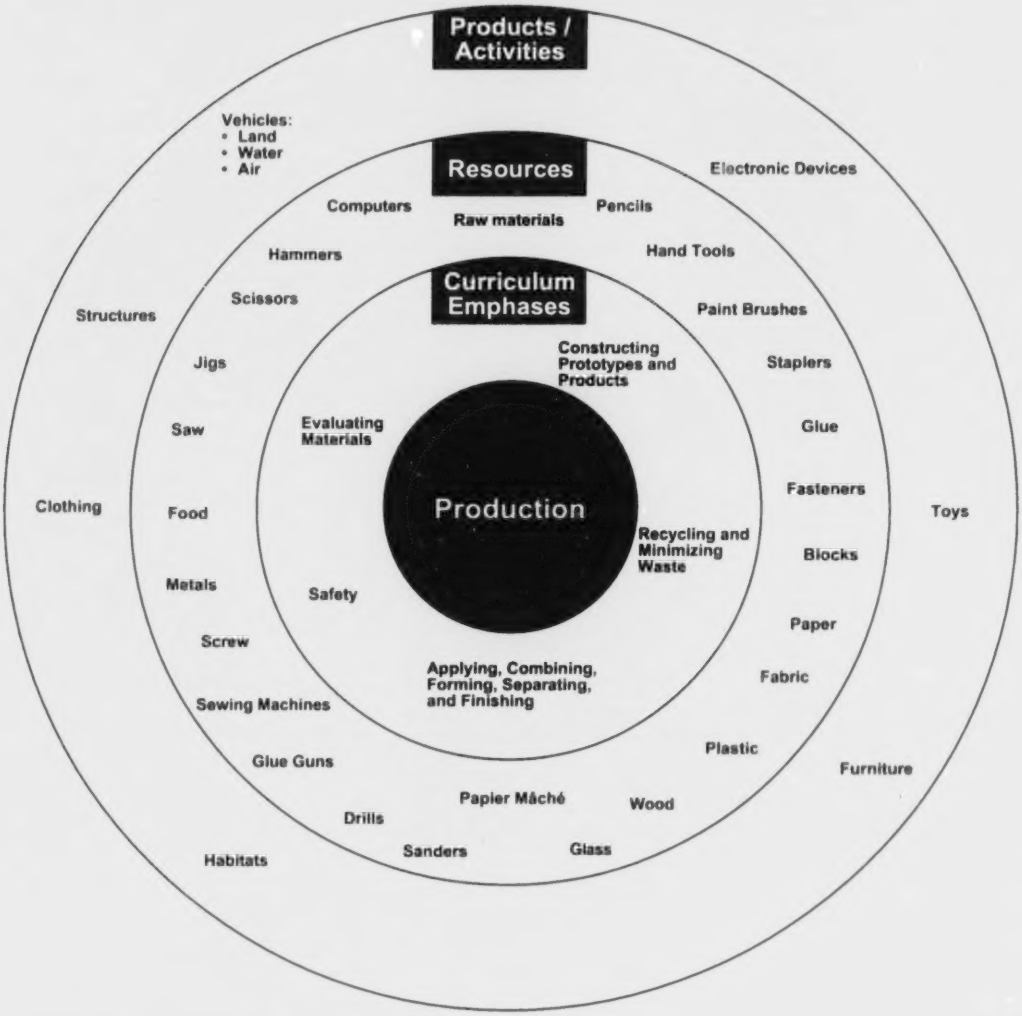
Production

The introduction of new technologies has influenced the way we create and make things. Students need to know about the safe use of tools and materials. They acquire skills by designing and developing products and systems that satisfy human needs and wants. The prescribed learning outcomes emphasize:

- applying the processes of combining, forming, separating, and finishing to the development and improvement of products at home and in the industrial world
- evaluating and selecting materials to meet specific design requirements
- constructing models, prototypes, and products to detailed specifications
- examine processes and procedures used to minimize waste and to reuse products
- developing appropriate attitudes and practices about working safely, whether in the workplace, at home, or in the school laboratory


Products / Activities
Vehicles:
• Land
• Water
• Air
Electronic Devices
Resources
Computers
Raw materials
Pencils
Hammers
Hand Tools
Curriculum Emphases
Scissors
Paint Brushes
Structures
Constructing Prototypes and Products
Jigs
Staplers
Saw
Evaluating Materials
Glue
Fasteners
Clothing
Food
Production
Toys
Recycling and Minimizing Waste
Blocks
Metals
Safety
Paper
Screw
Applying, Combining, Forming, Separating, and Finishing
Fabric
Sewing Machines
Plastic
Furniture
Glue Guns
Papier Mâché
Wood
Drills
Habitats
Sanders
Glass

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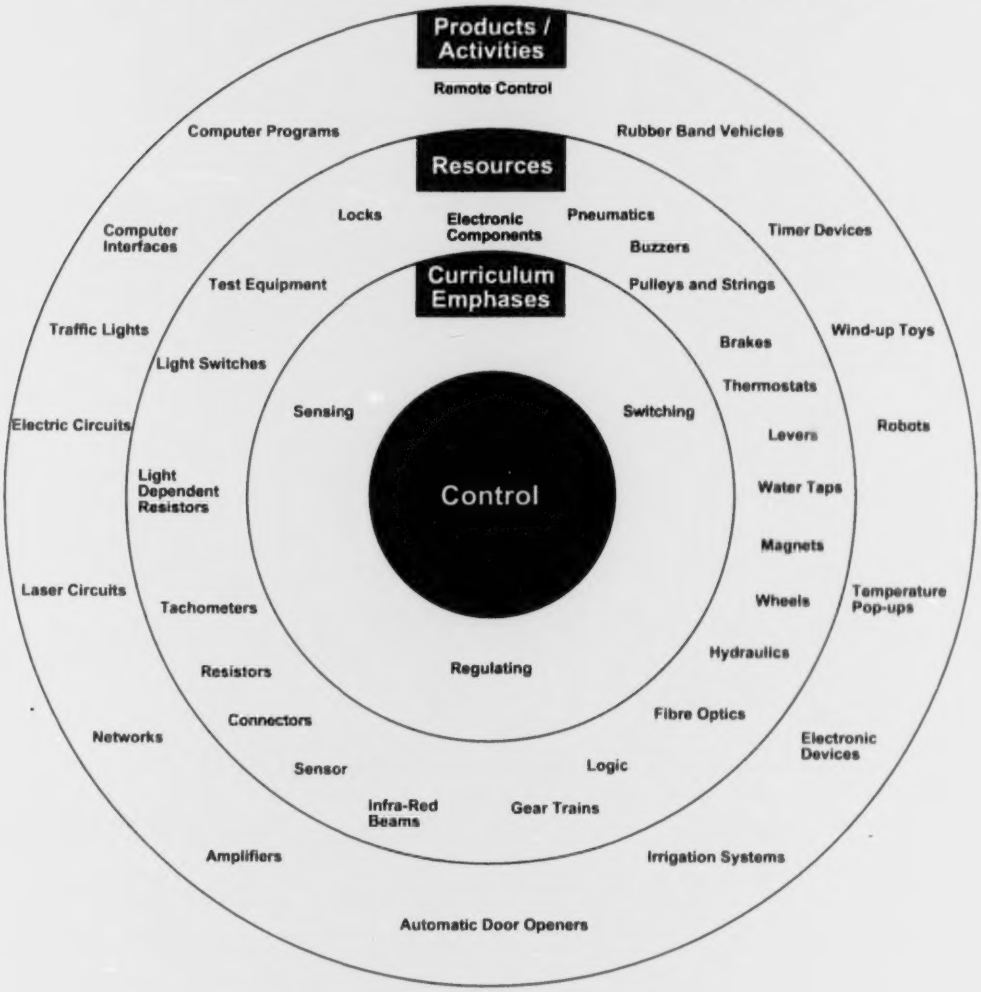
Control

Control addresses the application of devices and processes to manage, sort, control, and organize systems. The prescribed learning outcomes emphasize identifying and designing devices and processes in systems that integrate the following:

- Sensing: detecting, interpreting, and monitoring energy in a system using electric, electronic, fluid, or mechanical devices. Information is processed, and a decision is made that results in a specific outcome (e.g., the auto-stop function on a cassette player; an infra-red beam on a conveyor belt counts boxes as they pass).
- Switching: any method (e.g., mechanical, electronic) used to turn the flow of energy in a system off and on (e.g., a motion detector activates an alarm when an intruder is present; triggering the start of a model car on a ramp).
- Regulating: varying the flow, amount, and direction of all forms of energy (e.g., human, fluid, mechanical, electrical, heat).


Products / Activities
Remote Control
Computer Programs
Rubber Band Vehicles
Computer Interfaces
Timer Devices
Traffic Lights
Wind-up Toys
Electric Circuits
Robots
Laser Circuits
Temperature Pop-ups
Networks
Electronic Devices
Amplifiers
Irrigation Systems
Automatic Door Openers
Resources
Locks
Electronic Components
Pneumatics
Buzzers
Test Equipment
Pulleys and Strings
Light Switches
Brakes
Thermostats
Levers
Light Dependent Resistors
Water Taps
Magnets
Tachometers
Wheels
Hydraulics
Resistors
Connectors
Fibre Optics
Sensor
Logic
Infra-Red Beams
Gear Trains
Curriculum Emphases
Sensing
Switching
Regulating
Control

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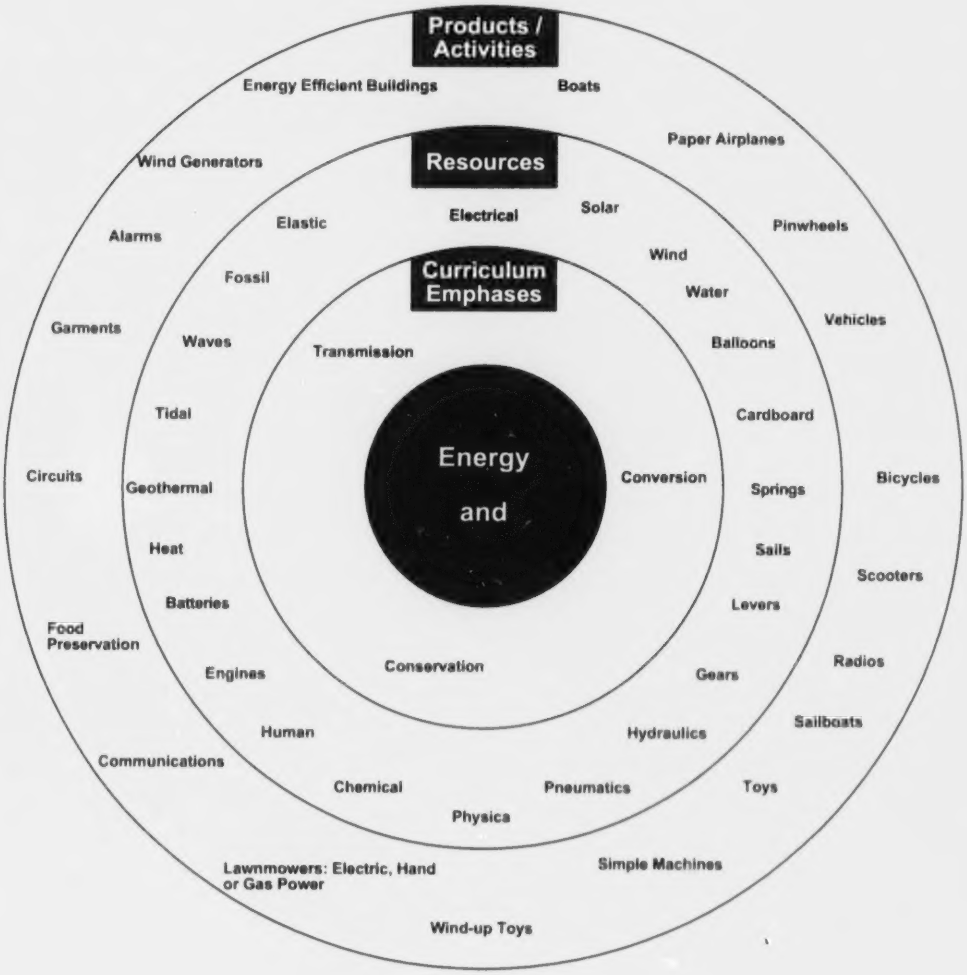
Energy and Power

Energy and Power refers to devices and processes that convert, transmit, and conserve forms of energy. The prescribed learning outcomes emphasize the analysis, design, and construction of systems that apply the following principles:

- Conversion: when energy is changes from one form to another (e.g., energy stored in a battery is converted into mechanical energy by an electric motor).
- Transmission: using devices and systems to transfer energy from one location to another (e.g., energy is transmitted from an electric motor through gears that turn the wheels of a modern car, causing it to move).
- Conservation: using existing energy efficiently and finding alternative energy forms (e.g., aerodynamically designed vehicles; using solar energy to toast bread).


Products / Activities
Energy Efficient Buildings
Boats
Paper Airplanes
Pinwheels
Vehicles
Bicycles
Scooters
Radios
Sailboats
Toys
Simple Machines
Wind-up Toys
Lawnmowers: Electric, Hand or Gas Power
Communications
Food Preservation
Circuits
Garments
Alarms
Wind Generators
Resources
Electrical
Solar
Wind
Water
Balloons
Cardboard
Springs
Sails
Levers
Gears
Hydraulics
Pneumatics
Physica
Chemical
Human
Engines
Batteries
Heat
Geothermal
Tidal
Waves
Fossil
Elastic
Curriculum Emphases
Transmission
Conversion
Conservation
Energy
and

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Selection from Voltaire's Bastards by John Ralston Saul, pg 268:[36]

The example of the postal system is even more blatant. The more the United States and Canada modernize — or rationalize — their mail delivery, the less mail they can deliver and at a slower rate to fewer places, with increasing irregularity and at both greater expense and higher cost to the user. Why? Because no systems analysis can justify mail deliveries six days a week. Nor deliver to rural areas. Systems analysis tells us not to deliver to private doors. It tells us to leave mail in grouped boxes, which the public must walk to, whatever their age and whatever the weather.

The British and French have done none of these things. Instead they have continued to offer the fullest, fastest and most accessible services possible. Two deliveries a day in Paris - to even the most inaccessible door. Flawless delivery time, they have turned post offices into the most varied communications centres possible. By offering more and better services, they have encouraged people to use the post office. The resulting customers make the whole process more and more viable.

Meanwhile in Canada, in order to cut employment costs, post offices are being closed. The postal service is being franchised to variety stores as a sideline. These offer little more then stamps. They also cut the public off from their public servants in the post office.

The question of employment is particularly interesting. Humans deliver mail. If you reduce costs by reducing employment, you undermine the system's performance. This sets in motion the spin towards shrinking services. Systems analysis doesn't understand this because it is busy trying to make each element of government service profitable, without realizing that a public service is not a separate, private corporation but part of a whole which is the entire public structure. If the profitability of a service were to be measured accurately, it would have to take into account the effect of that service on the lives and business of the population.

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[36] Adapted with permission from "The Technology Education Systems Approach" by Stanley A. Komacek in the International Technology Education Association's *Integrating Technology, People and the Environment*.

Overcome Math Anxiety

LEARNING OUTCOME

Upon completion of this unit, learners will be able to describe strategies for overcoming math anxiety.

Note: Throughout the course, math puzzles and activities can add a sense of fun and ease to the learning process. It is useful to frame the learning of math in the context of the goals the learners are setting for their careers. Acknowledging potential difficulty and providing support and encouragement, as well as successful role models will foster success.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Determine the importance of math in careers.	• Name five jobs in each of the following categories that would be out of reach without math: science and engineering, medical and health services, computer-related fields, the trades. Use Handout 1: Science and Mathematics—Keys to Tomorrow, or make a transparency of it. Discuss the implications.
• Describe the characteristics of math anxiety.	• Read "Overcoming Math Anxiety" in *Surviving and Thriving* and/or *Becoming a Master Student* and in small groups discuss the description of the physical and psychological symptoms. Has anyone in the groups experienced these types of responses? In what situations? What did they do?
• Explore personal history as it relates to math.	• To modify any anxiety about math, it is important to understand how the feelings were initially developed. Read "Overcoming math and science anxiety" in *Becoming a Master Student*. Ask learners to complete a "math autobiography" like the one in that chapter. They might consider chronicling their earliest memories of dealing with mathematics, both positive and negative; include school experiences and family interactions. Did attitudes differ toward males and females? Next, describe any current situations involving math where you feel uncomfortable, and/or particularly good about yourself. How do you handle them? Remind learners that "the psychological state of mind has to be dealt with directly, if the past humiliations and frustrations are not to inhibit present performance." (S. Tobias) Discuss learners' responses to the task.
	• Ask learners to describe the messages they give themselves about their math abilities. Have them write down this self-talk over the next week. Using these lists, in small groups, examine the messages and analyse the impact of that self-talk on their performance, then develop a list of affirmative statements that could replace those messages.

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Specific Learning Objectives	Teaching/Assessment Strategies
- Analyse the causes of math anxiety.	- Brainstorm myths some people believe about math and those who do math and science. In small groups, using that list, suggest ideas and methods for overcoming math anxiety. Use "Overcoming math and science anxiety," "Solving math and science problems," and "Special techniques for math and science tests" from *Becoming A Master Student* as resources. Share ideas in large group.
- Examine methods for decreasing math and science anxiety.	- Distribute Handout 2: Tips on Reducing Math Anxiety.

RESOURCES

Books, Articles and Software

- Arem, Cynthia A. *Conquering math anxiety: a self-help workbook.* Pacific Grove, Calif.: Brooks/Cole Pub. Co., 1993.
- Board of Education, City of North York. *Blueprint Careers...the variable is YOU.*

  Contains great activities for math problem-solving, spatial activities, logic and technological understanding.
- Braundy, Marcia, Ed. *Surviving and Thriving—Women in Trades and Technology and Employment Equity.* Winlaw, British Columbia: Kootenay WITT, 1989. Ph: (250) 226-7624 (See "Recognize, Adapt, and Modify Workplace Culture" for review.)
- Davidson, Randy and Ellen Levitov. *Overcoming math anxiety.* New York: Harpercollins College Pub., 1993.
- Ellis, David B. *Becoming a Master Student.* Boston: Houghton-Mifflin Company, 1994. (See "Develop Self Awareness for review.")
- Kaseberg, Alice; Nancy Kreinberg and Diane Downie. *Use EQUALS to promote the participation of women in mathematics.* Berkeley: Lawrence Hall of Science, University of California, 94720. Attn: EQUALS, 1981.

  Still extremely current and useful, and new materials being developed all the time. Check them out on the Internet. See also SPACES—Solving Problems of Access to Careers in engineering and Science, Sherry Fraser and Math for Girls and other Problem Solvers, Diane Downie et al.
- Perl, Teri. *Women and Numbers: Lives of Women Mathematicians plus Discovery Activities.* San Carlos, California: Wide World Publishing/Tetra. 1993.
- *Tools for Change and Women Enter the Computer Age.* (Vancouver: Learning Resources) are both excellent on this issue. Unfortunately they are out of print. Check your college or public library listings for these useful resources.
- *Demystifying Math: A Self-Instructional Workbook for Adults.* Victoria, BC: University of Victoria. (Cost: $19.00)
- Tobias, Sheila. *Overcoming Math Anxiety.* New York: W.W. Norton. Revised 1994. (Houghton Mifflin, paperback, 1980.)

  The most popular and a very readable reference for clear and basic understanding on the issue. Identifies the nature of the problem, the costs of avoiding math, and some solutions.
- Tobias, Sheila. *Succeed with math: every student's guide to conquering math anxiety.* New York: College Entrance Examination Board. Distributed by Macmillan Publishing Co. 1987.
- Tobias, Sheila. *The Problem: Math Anxiety and Math Avoidance, The Solution: Re-entry Mathematics.* Available from the Institute for the Study of Anxiety in Learning, Washington School of Psychiatry, 1610 New Hampshire Ave, Washington, D.C. 20009. Ph: (202) 667-6380.

  This excellent article provides a description, analysis, and bibliography on the issue; includes books, articles, videos, and organizations and courses/programs across the U.S. and Canada.
- Tobias, Sheila and Carl T. Tomizuka. *Breaking the science barrier: how to explore and understand the sciences.* New York: College Entrance Examination Board, 1992.
- Tobias, Sheila. *They're not dumb, they're different: stalking the second tier.* Tucson, Ariz.: Research Corporation, 1990.

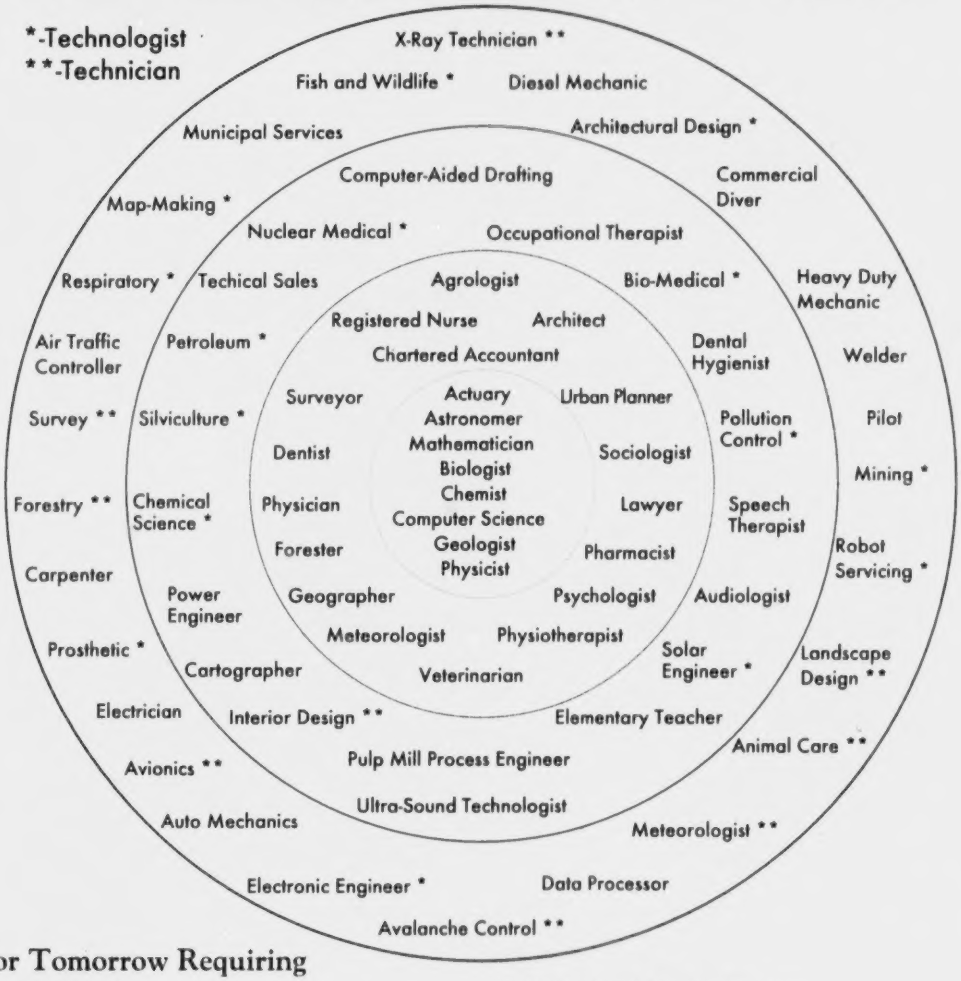
  An occasional paper on neglected problems in science education.

Films and Videos

- Pasnak, William. *Polynomials* and *Real numbers.* Burnaby BC: Open Learning Agency, 1993. Ph: 1-800-663-1653.

Handout 1

Science and Mathematics—Keys to Tomorrow[37]


*-Technologist
**-Technician
Actuary
Astronomer
Mathematician
Biologist
Chemist
Computer Science
Geologist
Physicist
Agrologist
Registered Nurse
Architect
Chartered Accountant
Surveyor
Urban Planner
Dentist
Sociologist
Physician
Lawyer
Forester
Pharmacist
Geographer
Psychologist
Meteorologist
Physiotherapist
Veterinarian
Computer-Aided Drafting
Nuclear Medical *
Occupational Therapist
Techical Sales
Bio-Medical *
Petroleum *
Dental Hygienist
Silviculture *
Pollution Control *
Chemical Science *
Speech Therapist
Power Engineer
Audiologist
Cartographer
Solar Engineer *
Interior Design **
Elementary Teacher
Pulp Mill Process Engineer
Ultra-Sound Technologist
X-Ray Technician **
Fish and Wildlife *
Diesel Mechanic
Municipal Services
Architectural Design *
Map-Making *
Commercial Diver
Respiratory *
Heavy Duty Mechanic
Air Traffic Controller
Welder
Survey **
Pilot
Mining *
Forestry **
Robot Servicing *
Carpenter
Prosthetic *
Landscape Design **
Electrician
Animal Care **
Avionics **
Auto Mechanics
Meteorologist **
Electronic Engineer *
Data Processor
Avalanche Control **

Jobs for Tomorrow Requiring Science & Math

The numbers and kinds of jobs needed for tomorrow's market depend upon the interplay of economic, social and technological factors. Some new jobs will emerge from the technologies, while some traditional jobs will decline in importance. Employment projections are, by their nature, imprecise. They should not be the only source of information for making career plans, but employment projections can help you assess future opportunities in occupations that interest you. Following are some projections* for BC:

In Science and Engineering

- Science - Basic scientific research to protect the environment and to develop new technologies and products. Chemists and geologists are in the forefront of projections for BC.
- Engineering - particularly mining, mechanical, metallurgical and petroleum engineering.
- Technicians and technologists in all areas of science and engineering.

In Medical and Health Services

- Besides doctors, dentists and nurses, there will be a particular need for specialists in the care of elderly people, as the population ages. Growth is expected in all health care occupations such as occupational, speech and physiotherapy. Dental hygienists and dental lab technicians are high on the list.

In Computer-Related Fields

- As the use of computers expands in all fields, the need for computer-trained people increases rapidly. Systems analysts, programmers, hardware-specialists, computer operators and others are in growing demand.

In the Trades

- New jobs are opening in the trades, many related to computerized systems. Fields especially worth pursuing are mechanical repair, electrical and electronic repair, metal and wood-working. Most training programs for trades now require at least grade 11 math and physics.

* Projections have been cited from the Canadian Occupational Projections Systems Databank.

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[37] Reprinted from the brochure prepared by Maro Jo Duncan and produced by Press Gang, which was in turn sponsored by the Women's Studies Program, Simon Fraser University. Used with permission.

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Tips on Reducing Math Anxiety[38]

Remember that dropping math can close the door to 80 per cent of the job market. So, here are some tips to help you reduce your anxieties about math.

1. Learn how to study.
    - Examine and reframe for positive self-talk.
    - Be aware of what you are learning and ask questions.
    - Get clear on one concept before going on to another.
    - Read actively, work out examples, construct additional problems.
    - Make sure you get feedback—ask questions and get answers.
    - Practice; read the problems aloud in words until you understand them.

2. Start at a level where you feel confident.
    - If you need it, ask for more time.
3. Don't be too hard on yourself.
4. Think critically! Ask questions! (Remember: there are no dumb questions.)
5. Take notes, especially on helpful rules.
6. Use your intuition—your first answer is often right

For tests:

- give yourself some time to panic;
- yell: Stop! (silently or out loud to enable a refocus on the task at hand)
- breathe deeply; relax; and
- find some questions you know how to do and get started.
- set up a problem in words before you begin to solve it.

Remember: Success breeds success!

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[38] Thanks to Joan Connors, College of New Caledonia, and David Ellis, *Becoming a Master Student*, for these ideas

Solve Mathematical Problems

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to analyse and solve problems involving: whole numbers, fractions, decimals, ratio and proportion, per cent, powers and roots, simple formulas, simple geometry, converting metric, interpreting simple graphs, and use these skills appropriately in a variety of different content areas.

Note: This unit is a refresher unit for those who have had grade 10 math at some time in the past. If the learning needs are greater than that, please refer learners to basic upgrading courses. Also useful is the TRAC Common Core Learning Guide Line B, Solve Math Problems, a self-study book. Additional effective textbooks are highlighted in the resources section.

As math can often be intimidating to those who have not studied it for a long time, or who did not do well in it in earlier education, it is important to supplement the TRAC material with introductory and review workshops with a math instructor sensitive to the learning needs of the group and the individuals. The first session might be a 1/2 hr review workshop on whole numbers; the next, longer, to introduce and practise word problems; the third could be on fractions/decimals, to review the rules and do self tests; metric and ratio/proportion could be taught together with percentage. The last session could be an intensive workshop on manipulating formulas and equations. Using group projects related to practical applications examples (e.g., pay slips, commissions, overtime, household budgeting, credit card interest and bank loans, RRSP, the cost of purchasing and maintaining a car, or house, painting a house, etc. with graphs, tables and/or spreadsheet programs to communicate solutions) will assist learners to integrate math usage more effectively.[39]

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Specific Learning Objectives	**Teaching/Assessment Strategies**
• Solve problems involving whole numbers.	• Ask learners to complete TRAC Learning Guide Line B, Solve Mathematical Problems, Competency B-1 and/or conduct workshop on this material from Addison/Wesley Mathematics or other text.

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[39] Some of the ideas in this paragraph are adapted from *Introductory and Applied Mathematics 11 - IRP*, British Columbia Ministry of Education, Skills and Training.

Specific Learning Objectives	Teaching/Assessment Strategies
• Solve problems involving fractions and decimals.	• Complete *TRAC Competency B-2 & B-3* or other material.
• Convert metric and imperial measurements.	• Complete *TRAC Competency B-4* or other material.
• Solve problems involving ratio and proportion, and per cent.	• Complete *TRAC Competency B-5 & B6* or other material.
• Solve problems involving roots and powers.	• Conduct a workshop showing learners how to use a scientific calculator.
• Interpret simple graphs.	• Complete *TRAC Competency B-7* or other material.
• Solve problems involving simple formulas.	• Compete *TRAC Competency B-8* or other material.
	• Complete *TRAC Competency B-9* or other material.
• Solve problems involving perimeters, areas, and volumes.	• Complete *TRAC Competency B-10* or other material.
• Solve problems involving angles, triangles and geometric constructions.	• Complete *TRAC Competency B-11* or other material.

RESOURCES

Books and Articles

- Delmar Publisher. *Math for Carpenters; Math for Electricians; ...Electronics Technicians; ...Welding; ...Heating and Cooling; ...Auto Technician.*
- Kelly, Brendan; Bob Alexander, and Paul Atkinson. *Addison-Wesley Mathematics 9-12.* Don Mills, Ontario and Redding Mass. Addison-Wesley, 1989.

  A teacher's resource book that uses both men and women photos and examples, uses illustrated application examples throughout, sequenced to develop concepts with reinforcing exercises, reflects and teaches use of new technology; focuses on problem-solving, with interspersed sections on investigation.
- Near, Mark. *Managing Lifestyles: Survival Math Skills.* Pleasantville, New York: Sunburst Communications, Inc. Three programs and a teacher's manual - $65. Ph: (914) 747-3310.

  Using the real-life situations of Comparison Shopping, Budgeting, and Calorie counting, these programs provide an excellent context for using a variety of math components.
- Province of British Columbia. *Mathematics 10-12: Integrated Resource Package.* Ministry of Education, Skills and Training. Victoria, 1996.

  "Learning Outcomes and Suggested Assessment Strategies require the active participation of the learner, take into consideration that people learn in different ways, that learning is both a group and an individual process and have been developed with high standards and a commitment to providing equity and access to all learners." There is a strong focus on making math activities engage the interest and imagination of learners and to achieve a high level of development in mathematical thinking to solve problems in a variety of disciplines and the real world. It encourages the use of new technology to investigate and solve problems. Gender and diversity issues are identified, and strategies are discussed. The material has both an applied and theoretical stream. It is well done, with an excellent list of print and audio-visual resources. Check it out on the Internet: www.est.gov.bc.ca/curriculum/welcome.htm
- Stein, Edwin I. Refresher *Mathematics with Practical Applications.* 7th ed. Boston, Mass.: Allynand Bacan, 1980.

  A highly recommended refresher and teaching text that includes many practice examples.
- Stein, Edwin I. *Basic Math for College Students.* 7th Edition. Wm. C. Brown Pub., 1983.
- Stein, Edwin I. *Prentice Hall Refresher Mathematics* (Teachers Resource Book). Needham, Massachusetts: Prentice Hall, Inc. 1989. ISBN 0-13-771148-4.

  Highly recommended.

Videos and Films

- *Math Shop.* Open Learning Agency. VHS. 1993. Available from Image Media Services Ltd. Ph: 1-800-563-0777 or 1-800-665-6636. Developed as a telecourse; 16 half-hour programs aimed at high school level or re-entry level. Includes algebra.
- *Managing Your Personal Finances.* Meridian. VHS, 29 min. 1989. MacIntyre Media. Ph: 1-800-565-3036.

Software

- *The Logic Box*

Examine Basic Physics Concepts

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to explain and use the concepts of physics.

Note: Physics is often a complex and difficult subject for many people, but especially for women who have been out of the educational system for long periods, or who have dropped the pursuit of it early in their studies. If this is not your area of expertise, it is useful to bring in a competent teacher for this subject, remembering that female role models and relating the material to learners' daily lives and experiences, are very important.

This unit and the TRAC Common Core Learning Guide C undertake a very basic approach to learning physics and how the concepts can be used effectively in our lives and work. An additional, more-advanced technical level might be needed for those who will pursue technology occupations. This unit will demonstrate their capacity for further study.

Specific Learning Objectives	Teaching/Assessment Strategies
• Analyse and describe how the principles of physics apply in daily life.	• View the videos in the *Eureka!* series (see Resources). Ask learners for examples of how those principles could affect or be used to enhance their daily lives. • Brainstorm those occupations that would be out of reach without an understanding of physics.
• Investigate the following principles of physics: inertia, mass/weight, gravity, speed/acceleration, force/friction, simple machines, and energy and power, including electricity and electromagnetism.	• Distribute the handout, Scientific Method, and discuss it with the class: Have learners ever experimented to see if advertising was true? Have "laws of nature" ever had an impact in their lives? What is the difference between deductive and inductive reasoning? What did they "deduce" from the true/false exercise? How did they get that answer? Can they think of an hypothesis they would like to prove for which an experiment might be set up? • Assign learners to read two books of their own choice, in any of the following areas: science for the non-specialist, the development of technology, or the biography of a scientist. • Ask learners to compile a one to two page report on one important physics concept, development, or approach to scientific investigation, in language clear enough to be understood by a reader unfamiliar with the topic, and make a presentation to the class, either as a verbal report or as a sample demonstration.

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Specific Learning Objectives	Teaching/Assessment Strategies
• Perform simple physics experiments related to the physics principles studied.	• The *TRAC Common Core Learning Guide Line C* (1989 edition) has some good self-study learning materials and experiments, that explain the basic laws of physics. It must be used with an instructor who can simplify it and relate it to real-life applications. See also *Applied Physics: Advanced Level Integrated Resource Package*, for more technical instructional strategies. • Assign some theory and some lab work each day. Toward the end of the session, divide learners into groups of five or six to discuss the activities of the day, using the terminology that has been learned. (When they get the word, they get the function!) Refer to Handout 1: Scientific Method, and ask learners to form small groups to develop solutions to specific physics questions. Contact a physics instructor or use *Thinking Physics* to generate questions. (Since some questions will require research, you may want to allow a couple to weeks for this.)

RESOURCES

Books and Articles

- Province of British Columbia. *ABE Intermediate Science, Simple Machines Workbook, Tests and Assignments.* Victoria, B.C. 1985. Out of print, check your college library.

  The Open Learning Institute has produced some very good workbooks and teaching guides on science, and Adult Basic Education centres in colleges around the country are using them. They can be used in an ongoing manner, or in a three-day intensive workshop format.

- Province of British Columbia. *ABE Adult Applied Academic Program - Applied Physics: Advanced Level IRP.* Victoria. 1997. Available from the Open Learning Agency.

  This volume is a rich source of specific learning objectives, learning activities, and resources for biology, physics, earth science, ecology, chemistry, computers, etc. It is useful for a course leaning more towards trades, and essential for one that focuses more strongly on the technologies.

- Editors of Consumer Guide. *How Things Work.* New York. Beekman House 320 pgs. 1990

  A great book of simple descriptions and good graphic representations of many inventions and everyday and arcane mechanical devices.

- Epstein, Louis C. *Thinking Physics.* Second Edition. San Francisco, California: Insight Press, 1985.

  A lively, problem-centred approach that encourages thinking about the application of physics concepts to easily-imagined situations.

- Heimler, Charles H. and Price, Jack S. *Focus on Physical Science:* Teachers Edition. Don Mills, Ontario M3C 3N1: Maxwell MacMillan Canada. 1984.

- Wyatt, Valerie. *The Science Book for Girls and other Intelligent Beings.* Toronto: Kids Can Press. 1993.

Videos

- *Eureka!* Series. TV Ontario. Available from college resource centres or through provincial educational media outlets.

  This is a series of five-minute programs, developed by TV Ontario, that blend cartoon characters and animated objects to illustrate the principles of physics. Each episode builds upon and adds to the information provided in the preceding program and each begins with a brief recap.

- *Up, Up And Away.* TV Ontario. Available through International Telefilm. Ph: 1-800-561-4300.

  The science of flight, using birds, kites, and planes.

- *W=FxD.* VHS, 20 min. Burnaby: Classroom Video. Ph: 1-800-665-4121. $69.

  Real world examples used to explain equations.

- *Collisions.* VHS, 18 min. Burnaby: Classroom Video. Ph: 1-800-665-4121. $69.

- *Inventing Women.* VHS, 27 minutes. Ontario: Women Inventors Project,1988.

  See Develop Technological Literacy for review. Overview of invention workshop and interviews with women inventors.

Internet

- www.est.bc.ca/curriculum/welcome.htm

Scientific Method[40]

A. Generalizing Accurately

Science requires induction from observations; that is, expanding from a few instances to a general rule. Here is an example.

"You can get into this course with Grade 12 math."

- True: you can get in with Grade 12 math and with Grade 11, and with "O-Levels," but not with only Grade 7.

Generalizing accurately means testing other possibilities to see what is really true: "You can get into this course if you have shown you have learned or could learn algebra." This sort of generalizing achieves two results:

1. It uncovers misleading data, such as,
   claims in advertising:
   - "Sunco oil doesn't soak into your food."
   True, but neither do many other brands; it all depends on the temperature of the oil during cooking.
   - "Kestrel oil: you can skate on it!"
   True, you can but you could skate on water over metal; oil isn't special in its ability to allow this.
   - "Kookie Glue: strong enough to fix a trapeze!"
   True, but there is no pressure on the glue in this situation, so even chewing gum would work!

   or, instructions in recipes:
   - "Take 250 mL (1 cup) Robertson's flour and ..."
   but, it needn't be Robertson's, of course.
   - "Add a pinch of salt."
   How much is a "pinch"? Exactly how much is needed?
2. It uncovers common aspects of situations and clarifies the concepts.

Try this exercise in a small group: How many ways can you measure time, without using a clock or watch? What are you actually measuring when you measure "time"?

Your answers might include: ways of measuring time all use some regular, repeated process to count off units of time, and that the length of an unknown interval is measured by comparing it to the counted-off units that filled the same length of time. Regular changes are the way we recognize and measure the passage of time.

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[40] This material was prepared for the OTT by Moira Gutteridge, University College of the Fraser Valley, BC.

B. Rules and Exceptions

Science depends on the correct application of rules related to the behaviour of numbers and things. These rules are either discovered or made.

1. Discovered rules ('laws' of nature or human behaviour) may often seem to have exceptions where new situations may not fit the old rule.
2. Made-up rules (laws, games, math, and logic) are not intended to have exceptions—but even here, new situations may turn out to look as if they do not fit.

Therefore, exceptions test the rule: literally, the saying, "The exception proves the rule" means, "The exception tests the rule." So, first you check if it really is an exception (it might not be); then, if it is, you amend the rule to make a true rule, or if it does not fit you discard the rule. Forming an accurate rule and making predictions from it is a key method in developing scientific theories. Here are a few examples where rules can be amended, so they are more likely to be true:

a. The proposed rule is: "If you broke it, you should fix it." The exception is: the egg you broke while frying it for breakfast.

So, you change the rule to make it more likely to be true: "If you broke something that isn't supposed to be broken, you should fix it."

b. The proposed rule is: "All bears are faster than me." The exception is: a tired, old, three-legged bear on crutches.

So, you change the rule to make it more likely to be true: If there are very few slow bears, try: "Most bears are faster than me." Or, if there are quite a lot of old or physically challenged bears, try: "Some bears are faster than me."

When is a rule not a rule? Or, when is a hypothesis false? The answer is: when it isn't always true for the things or situations it claims to cover. For example: "If you opened it, you should close it," claims to cover all things (anything) you could open. But there are many exceptions to this. Empty cans, bank accounts, gifts, your mind, your heart, etc. So, even though there are many things it does fit, the exceptions break the rule. Therefore:

"If you opened it, you should close it" is false.

"Women can't be doctors" is false.

"If you add two odd numbers, the answer is an even number" is true.

Try this exercise. Answer True or False. If your answer is false, give an example to support your answer.

1. Technology will improve the quality of life.
2. Computers can replace humans in all repetitive, boring tasks.
3. Multiply two even numbers and the answer will be an even number.
4. There is no job from which women can reasonably be excluded.
5. What goes up must come down.

C. Experimenting

Experimenting is the cycle of theory formation and testing. In your written record of your experiment, you should include the following items.

1. Observations. This should raise questions: Why? How did this happen?
2. Hypothesis. This states your object and purpose and provides a part of a wider theory: "A causes B."
3. Design test. This is the situation in which the hypothesis makes a clear prediction. Use the "criterion of falsifiability," (for instance, if A then B; if not B, then not A). In testing, important variables must be controlled so, for instance, only A can affect B (only A or B change). State your materials and your method, and include observations (data) and calculations. (For instance, A always leads to B.)
4. Conclusion. This should always be a discussion of whether the hypothesis was confirmed or not. Maybe the result falsified the hypothesis. If so, what further conclusions, predictions, or hypotheses are suggested by this? Explore any sources of error and analyse: Were some variables inadequately controlled and, if so, might the hypothesis still be valid? Or, is the hypothesis false? Include suggestions for further study and identify other hypotheses suggested by your experiment.

Your next experiment should include further tests and observations, using your refined hypothesis. The following example uses the outlines method of experimentation.

Hypothesis: Heavy objects fall when released.

1. Check the meaning of this statement. Does it mean that any heavy object falls when released, regardless of height, location, etc.?

2. Look for an 'acid test'—a test that could prove this statement wrong (e.g., a heavy object that goes up sometimes/somewhere).
    - Apply the criterion of falsifiability: If a test has no possible outcome that could disprove a theory (could not falsify it), it's not a good test.
    - The best tests are those with the best chance of proving the theory wrong. If a theory survives those tests, it's a good theory. Remember: A rule (theory or law) is not true if it has any exception (although a revised version, may be true).
3. Plan an acid test: Will my cat fall if I open my arms? Will a cork fall if released in water? (List your materials and your method.)
4. Comment on the effect your test could have on the hypothesis. Remember: If one of cat or cork does not fall, the hypothesis, as it stands, will be false.
5. Indicate what value this test will have to our understanding. If the test succeeds, we can look into why weight makes objects fall. If it fails, we can look into what does cause an object to fall.

   Carry out observations and report them. (The cat jumps and the cork floats.)
6. Conclusion: The hypothesis, as it stands, is false. Only inanimate objects denser than the medium they are released in will fall, and then only if no force stronger than gravity is pushing upward on them.

Hands-On Trades and Technology Skills

UNITS

- Process Technical Information
- Practise Drafting and Blueprint Reading Techniques
- Develop Familiarity with Generic Tools
- Use Basic Measuring, Layout, Hand and Power Tools, Ladders, and Scaffolding in the Carpentry Shop
- Use Basic Measuring, Layout, Hand and Power Tools in the Metal Shop
- Secure Loads and Operate Equipment for Lifting
- Examine the Basics of Automechanics
- Explore Basic Plumbing Skills
- Develop Basic Skills in Oxyacetylene Cutting, Welding, and Brazing
- Use the Principles of Electrical Devices
- Explore Electronics Technology Applications
- Explore Basic Computer Skills
- Investigate the Environmental Sector
- Explore the Components and Career Opportunities of Forest Resource Technology

KEY IDEAS

- **Tinkering is the basis for much trade and technical discovery. It is O.K. to take things apart! Overcoming the fear of breaking the object will enable real discovery to take place.**
- **It is O.K. to make mistakes; that is how people learn. The important part is to figure out what happened so you can change it next time.**
- **Many of the skills included in this topic (in particular those from the TRAC Common Core) are applicable to a wide variety of occupations. For example, drafting and blueprint reading are essential in such occupations as architecture, engineering, carpentry, and electronics.**
- **Hands-on training provides strong incentives to accomplishment.**

PURPOSE

Most women, and some men, have had little or no exposure to the theory and hands-on applications in trades and technical areas. It is very difficult to make informed career choices when whole realms are unexplored. Regardless of whether a woman chooses any one of them as her career path, the skills gained from such an exploration provide a competency and confidence base from which to expand into almost any area of endeavour. This topic provides the opportunity to develop an occupational decision based on experience.

REQUIREMENTS

This topic requires basic academic skills as prerequisites to theory work in many of the units (some practical hands-on exploration could be attempted without it, but ensure that it doesn't produce an unrealistic impression of the discipline); a willingness to overcome fears and reluctance in handling hand and power tools and equipment; and a commitment to safety.

Process Technical Information

Learning Outcomes

Upon completion of this unit, learners will be able to locate parts and service information, describe methods of record keeping, and write simple reports.

Note: You may want to combine this unit with "Explore Basic Computer Skills."

Specific Learning Objectives	Teaching/Assessment Strategies
• Using a variety of tools and sources, locate specific parts and service information.	• Have learners research the types of information that may be found in a parts catalogue or service manual, and describe at least five different kinds of situations where they would be useful. Learners can complete *Heavy Duty Mechanic: Line C-1: Locate Parts and Service Information, Outdoor Power Equipment and Motorcycle Service Technician (OPE) Competency B-2*, "Describe Parts Inventory Records and Controls," and/or similar material and exercises provided by the instructor to enable them to use manuals, microfiche, and computers to access parts and service information.
• Describe and correctly execute methods of record keeping.	• Brainstorm in class why it is necessary and useful to fill in all the information requested on a work order, purchase order, parts requisition, estimating sheet, and inventory control.
	• Ask learners to determine where, when, and for what and whom, the information required on the following sheets is used: time sheets; equipment logs; maintenance logs; material records. See *OPE Competency B-3:* "Describe Service Department Record Keeping"
	• Learners can use the exercises provided in *Heavy Duty Mechanic: Line C-2*, "Describe Methods of Record Keeping," or other material provided by instructor. Evaluate and return as necessary.
• Write a simple report.	• View the video, *It's Happened Before*, or present a detailed accident scenario in story form. Ask learners to take note of the key events and write simple reports documenting events, which can be used to describe the problems and solutions at another time. Learners can use the outline in *Heavy Duty Mechanic: Line C-2, Learning Task 2 from OPE Competency B-3*, which provides good background, or one provided by the instructor.

RESOURCES

Books

- Entry Level Trades Training/*TRAC Common Core Manuals*. Victoria: Province of British Columbia, 1987/89. Ph: 1-800-663-1663.
- *Outdoor Power Equipment and Motorcycle Service Technician Learning Guides*. Victoria: Province of British Columbia. 1995. Available from the Open Learning Agency. See "Use Safe Work Practices" for review.
- Province of British Columbia. *Heavy Duty Mechanics: Process Technical Information: Competency C-1: Locate Parts and Service Information*. Victoria, 1993
- Province of British Columbia. *Heavy Duty Mechanics: Process Technical Information: Competency C-3: Write a Simple Report*. Victoria, 1993

Films and Videos

- *It's Happened Before*. Video 1/2" and 3/4" VHS, 20 min. Available through many provincial media resource centres.

  A bit outdated, this program is still a hard-hitting and dramatic documentary that takes a close look at the construction industry and its need for better systems for investigating and reporting accidents. Filmed on location at a construction site, the program shows how unsafe acts and conditions can cause serious bodily injury and costly damage to equipment. It also points out how accident investigation and reporting can reduce and eliminate many accidents.

Practise Drafting and Blueprint Reading Techniques

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to sketch simple objects using orthographic projection, and read detail and assembly drawings by hand and using computer-assisted drafting programs.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Identify the "alphabet of lines" and the standard lettering used on drawings.	• Have learners complete learning task 1, Sketch and Read Drawings *TRAC Common Core Learning Guide, Line D-1.*
• Practise the principles of orthographic projection and drawing to scale.	• Show the film, "*Orthographic Projection.*" Discuss learners' understanding of the concept and practice. If there are continued difficulties, invite a drafting instructor to give a two to three hour workshop on sketching simple objects using orthographic projections. • Have learners complete learning tasks 2-6, *in Line D-1*, demonstrating a variety of perspectives and views of orthographic drawing.
• Demonstrate practical competency in orthographic drawing.	• Ask learners to complete practical competency exercises in orthographic projection, *Line D 1*, pp. 77-83. Practice can involve both hand sketching and computer-assisted drawing. Evaluate and return.
• Identify isometric drawings.	• Ask learners to complete learning task 1, *Line D-2*, which explores the features of isometric drawing.
• Practise the principles of isometric drawing.	• Have learners complete learning tasks 2-4, *Line D-2*, making isometric sketches of simple objects. Discuss when these sketches would most useful. Identify situations where more formal drawings would be necessary, and why.
• Demonstrate practical competency in isometric drawing.	• Have learners complete practical competency exercises in isometric drawing, from *Line D-2*. Evaluate and return.
• Determine the drawing requirements and produce working sketches.	• Ask learners to complete a set of working drawings (construction or mechanical). See Learning Tasks 1 and 2, *Line D-3*, and practical competency 1.

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RESOURCES

Books

- Brown, Walter C. *Blueprint Reading for Industry.* Illinois: Goodheart-Willcox Co., 1972 and 1976.

  Expands on TRAC material and includes more blueprint reading in specialized areas including welding, sheet metal, machining.

- Entry Level Trades Training/*TRAC Common Core Manuals.* Victoria: Province of British Columbia, 1987.
- Nelson, John A. *How to Read and Understand Blueprints.* Toronto: Van Nostrand Reinhold Co., 1982.

  Expands on TRAC material.

- Palmquist, Roland. *Answers on Blueprint Reading.* Indianapolis: Bobbs-Merrill Co. Inc., 1982.

  A very extensive basic book that describes scale, instruments, and many different kinds of projections, drawings, and symbols, and goes into detail with architectural and electrical blueprints.

Films

- *Orthographic Projection.* VHS, 9 minutes, 1994. Sedalia, Missouri: The Media Centre. In BC, available from AEMAC.

  This film clearly describes the process of orthographic projection in simple and informative terms.

Develop Familiarity with Generic Tools

LEARNING OUTCOME

Upon completion of this unit, learners will be able identify the names, uses, and safety practices for a wide variety of generic tools.

Note: As lack of familiarity with tools and their names can undermine the success of women in the technical shops, it is important to complete this unit before entry into the shops.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Identify tools and their uses.	• Read "Developing Comfort with Tools and Technology" from Unit 2 in *Bridges to Equity Participant's Manual.* Ask learners to write down the three most important pieces of information they learned. How would they use it?
	• Have learners complete the General Knowledge Inventory and the Tool Identification Assessment in the *Bridges to Equity Program Manual Unit 1.* (Insert your province/state's name where applicable).
	• Present information on the concept of "Learned Helplessness" from Unit 4 in *Bridges to Equity Program Manual.* Ask learners to describe any experience with this concept.
	• Have learners identify and describe a variety of uses for tools listed on the Handout: Generic Tool List. This can be accomplished through drawing or by making collages.
	• Divide up the Handout list. Ask each learner to take several items and research possible nicknames, safe use practices, and "tricks of the trade" for handling those tools. Research sources may include catalogues, trade magazines, entry-level training learning guides, people who work with the tools, etc. Present/demonstrate to class.
	• Divide learners into small groups, giving them a tool box with a wide variety of tools, different for each group. Ask each team to develop a scenario where they would need to use the greatest numbers of tools in their kits.

RESOURCES

BOOKS

- Bohnen, Elizabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual and Participant's Workbook.* Toronto. City of Toronto: 1991. Office of the City Clerk, Resource and Publications, 100 Queen St West, Toronto, Ontario M5H 2N2 Fax: (416) 392-7999 (See "Develop Self-Awareness" for review).
- *Blueprint Careers Binder.* City of Toronto & North York School Board. 1991
- Kaseberg, Alice; Nancy Kreinberg and Diane Downie. *Use EQUALS to promote the participation of women in mathematics.* Berkeley: Lawrence Hall of Science, University of California, 94720. Attn: EQUALS 1981.

  Still extremely current and useful, and new materials being developed all the time. Check them out on the Internet. See also *SPACES - Solving Problems of Access to Careers in Engineering and Science* - Sherry Fraser and *Math for Girls and other Problem Solvers* - Diane Downie et al.
- Skull, Dr. John. *Key Terms in Technology Studies.* Aukland, New Zealand: Elbrook Press. 1990. PO Box 51428, Pakuranga, Aukland New Zealand. Elbrook Press, c/o Smith's Export Services, Carr Hill Industrial Estate, Dyform Works (Gate 9), Balby, Doncaster DN4 8DG, England. Also available from New York distributor.

  A superb book filled with photos and pictures and diagrams of tools and their processes, appropriate uses and handling. Very hard to get, and expensive, but there is nothing else like it.
- *Tips, Tools and Techniques. Home Maintenance and Hobbycraft - People with Disabilities and Seniors.* Ottawa: Human Resources Development Canada, 1995. Available through Enquiries Centre; Fax: (819) 953-7260

  A helpful guide that lists basic and specialty tools for home maintenance and repair, gives tips on how to use equipment safely, and provides information on the companies that supply such tools.

Handout 1

Generic Tool List[41]

You are required to know the following hand tools. These tools are "generic"—that is, they form the basic foundation for most of the tools used in the trades and technologies. If you know these tools, you will be competitive when applying for TTO positions.

Measuring

- try square
- steel square
- steel tape
- level
- callipers
- micrometer
- feeler gauges

Screwdrivers

- slotted
- Phillips®
- Robertsons®
- ratchet
- torque

Wrenches

- combination
- box
- open-end
- adjustable
- torque
- nut driver
- socket

Pliers

- needle (long) nose
- flat nose
- slip joint
- groove joint (channel lock®)
- diagonal cutting
- side cutting
- end cutting
- locking plier (vice grip®)
- wire stripper

Striking

- claw hammer
- ballpeen hammer
- soft-faced hammer
- sledge hammer

Struck or Hammered Tools

- cold chisel
- wood chisel
- centre punch
- taper punch
- pin punch
- ripping chisel
- universal nut cracker
- nail set

Vices

- machinist, utility
- wood workers, clamp-on
- pipe vice

Clamps

- C clamp
- welding clamp
- bar clamp
- spring clamp
- pipe clamp
- turnbuckle

Snips

- straight pattern
- combination/duckbill
- aviation

Pipe Tools

- pipe wrench
- chain pipe wrench
- pipe cutters
- threading tools

Saws

- back
- cross-cut
- hack
- keyhole

Dismantling tools

- crowbar
- bolt cutters

Safety/Personal Protective Equipment

- safety glasses
- hard hat
- ear protection
- breathing apparatus
- dust masks
- steel-toed boots

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[41] Adapted from *Bridges to Equity* (City of Toronto)

Use Basic Measuring, Layout, Hand and Power Tools, Ladders and Scaffolding in the Carpentry Shop

LEARNING OUTCOME

Upon completion of this unit, learners will be able to use tools and equipment safely to construct objects in the carpentry shop or construction site.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify and describe the safe use, care, and maintenance of basic construction hand tools.	• Bring a construction tool box into class. Identify each tool by its proper name and any nicknames you know of. Describe how the tool is used and in what circumstances. Pass the tools around the room so everyone gets a close look. Use *Hand Woodworking Tools* as a resource. If this is not your area of expertise, invite a female carpenter to provide the workshop.
	• Show the video, *Handsaws*. Learners can complete *TRAC Common Core Learning Guide, Line F-1*, "Use Basic Measuring Layout and Hand Tools," which covers the identification, use, care, and maintenance of construction hand tools.
	• Tour the shop, and discuss the uses and safety procedures for each piece of equipment.
• Identify, select, and describe the safe use of woodworking power tools.	• Show the videos, *Portable Electric Saws* and *Sharpening Drill Bits*. Learners can research and present the safe effective use of circular saws, sabre saws, a variety of saw blades, power drill and bits for a variety of purposes, bench grinders and stationary power tools, using *TRAC Common Core Learning Guide, Line G1*, "Use Power Woodworking Tools" learning tasks 1-7, and other material suggested by instructor.
• Identify wood products and describe storage and potential defects.	• Learners must read and sign the commitment to safety. Learners can research and identify wood products and their uses; proper storage and handling; the varieties and uses of hardwoods and softwoods, and how to identify defects using *TRAC Learning Line M-2*, "Use Materials" and "Use Fastenings and Fittings" or other resources.
• Complete practical projects using hand and power tools in the carpentry shop.	• Ask learners to complete a series of projects demonstrating safe, effective use of these tools approved by instructor.

Specific Learning Objectives	Teaching/Assessment Strategies
Describe types, regulations, and use of portable ladders and steel scaffolding.	Learners can research (using *Carpenter Line I: Use rigging and Hoisting Equipment: Competency I-1: Use Scaffolds and Ladders,* Workers' Compensation Regulations Code books, catalogues, construction manuals, etc.) effective and legal ladder and scaffolding set ups. Show films on safe practice (see Resources).
Erect scaffolding and ladders.	Using teamwork where appropriate, erect ladders and scaffolding to WCB specifications.

RESOURCES

Books

- Kositsky, Joel. *Carpenter Math.* Vancouver: Carpentry Joint Apprenticeship and Training Committee. Reprinted 1989. Ph: (604) 437-0678.
- Koel, Leonard. *Carpentry.* Illinois: American Technical Publishers. Second Edition, 1991.

  This is an excellent carpentry textbook, used by the United Brotherhood of Carpenters and Joiners. It is filled with great graphics that carefully demonstrate the technical operations being described.
- McCormick, Dale. *Against the Grain: A Carpentry Manual for Women*, Iowa City Women's Press, 1977.
- McDonnell, Leo P. *Hand Woodworking Tools.* Albany, New York: Delmar Publishers, 1962. Available in college resource centres.

  An extremely well-set-out text on hand tools that describes the varieties of specific tools and how to use them.
- Province of British Columbia. *Carpenter Line I: Use Rigging and Hoisting Equipment: Competency I-1: Use Scaffolds and Ladders.* Victoria, 1996. Distributed by the Open Learning Agency. Ph: 1-800-663-1653.
- Tetrault, Jeanne, ed. *The Woman's Carpentry Book: Building Your Home from the Ground Up.* Garden City, New York: Anchor Press/ Doubleday, 1980.
- Wilson, Peter; John L. Feirer, and Gilbert Hutchings. *Carpentry and Building Construction.* SL Copp., 1982 (Metric Edition).

  Comprehensive book used for years in the carpentry apprenticeship programs in technical schools.

Films and Videos

- *Handsaws.* 12 minutes, ITE, 1967. Often available in your local trades training departments, or show a film covering this subject area.

  This program explains the component parts of handsaws and demonstrates correct handling and usage of various saws. The crosscut saw, the rip saw, backsaws, and coping and compass saws are included in this program.
- *Ladder Safety.* VHS, 11 min. 1994. British Columbia: WCB. Ph: (604) 276-3068 or 1-800-661-2112 audio-visual librarian.

  "Ladder Safety" is designed to highlight the important safety procedures associated with ladder use on construction sites. The video uses classic black and white comedic film footage and computer graphic simulations to illustrate safe ladder technique.
- *Using ladders (including mobile, tubular, welded frame scaffolds).* VHS,13 min. Study guide (3 p.). Producer, Robert Kohl; director, Ralph Mizia. Centron Productions Inc. for Encyclopaedia Britannica Educational Corporation, 1990. ISBN: 0834757206. Distributed by Marlin Motion Pictures. Ph: 1-800-865-7617.

  Shows different types of equipment and appropriate jobs for each. Demonstrates proper set-up, use, and safety measures. Discusses troubleshooting for defects and wear.
- *Portable Electric Saws.* 22 minutes, BFA, 1969. Often available in your local trades training departments,

  Workers who use an electric saw must be very familiar with proper handling procedures and the safety factors involved. Sequences of ripping, cross-cutting, bevel-cutting of wood, and use of the saw in cutting metals and masonry are covered. Safety and the importance of letting the saw do the work are both emphasized
- *Sharpening Drill Bits.* Often available in your local trades training departments.

Use Basic Measuring, Layout, Hand and Power Tools in the Metal Shop

LEARNING OUTCOME

Upon completion of this unit, learners will be able to use tools safely to construct and repair metal objects.

Note: If this is not your area of expertise, invite a female machinist/millwright to provide instruction related to this topic.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify types, uses, structural shapes, and storage requirements of metal and fasteners.	• Complete *TRAC Common Core Learning Guide, Line M-1, Use Materials*, learning tasks 1-3, which cover ferrous and non-ferrous metals; sheet metal; plate, round, angle channel, tee, and I-beam; and Line L-2, "Use Fastenings and Fittings" learning tasks 1-2, which cover screws, threads, bolts and nuts. Or use similar competency-based learning materials. The videos, *Working with Metals in the Plant: Introduction to Metals*; and *Properties of Metals*, can provide a good background.
• Identify and describe uses, care, and maintenance of basic mechanical hand tools.	• Bring a mechanical tool box into class. Ask learners to identify each tool by its proper name and any nicknames they know of. Describe how the tool is used and in what circumstances. Pass the tools around the room so everyone gets a close look while you are talking.
	• Show videos that cover the safe effective use of Hand Tools and Hand Hacksaws and Files (see Resources). Have learners complete the *TRAC Common Core Learning Guide, Line F2, "Use Basic Measuring, Layout and Hand Tools,"* learning tasks 1-8, which cover identification, use, care, and maintenance of mechanics hand tools, or *Outdoor Power Equipment and Motorcycle Service Technician (OPE) Competencies C-1 to C-6* for comprehensive hand and shop tool exploration.
• Identify, select, and describe the safe use of metalworking power tools, twist drills, and cold chisels.	• Show a video on sharpening drill bits. Ask learners to complete *TRAC Common Core Learning Guide, Line G-2, "Use Basic Measuring, Layout and Hand Tools,"* learning tasks 1-9, or *OPE C Line*.
• Complete practical projects using hand and power tools to create objects in the metal shop.	• Have learners complete *TRAC Common Core Lines F-2, G-2, M-1, and L-2* practical competencies; OPE C-Line practical competencies, or other projects approved by the instructor.

RESOURCES

Books

- Province of British Columbia. *Outdoor Power Equipment and Motorcycle Service Technician Learning Guides*. Victoria, 1995. Available from the Open Learning Agency. Ph: 1-800-663-1653. (See "Use Safe Work Practices" for review.)

Films and Videos

These films were recommended by the BC articulation committee on the metal trades:

- *Working with Metals in the Plant: Introduction to Metals.* VHS, 17 min. 1992. Buffalo, Illinois: Telemedia Inc. Ph: (708) 808 4039 or 1-800-837-1255.

  Discusses metallurgy, properties, internal structure and major uses of metals; alloys, casting, metal-working and joining techniques.

- *Working with Metals in the Plant: Properties of Metals.* VHS, 17 min. 1992. Buffalo, Illinois: Telemedia Inc. Ph: (708) 808 4039 or 1-800 837-1255.

  Examines the mechanical properties of metals, including hardness, ductility, malleability, toughness and strength. Discusses tensile characteristics, compression and sheer stress, elasticity, strain, metal fatigue, thermal expansion, density and specific gravity. Shows practical applications for industrial situations.

- *Working with Metal in the Plant: Manufacturing Processes.* VHS, 16 min. 1992. Buffalo, Illinois: Telemedia Inc. Ph: (708) 808-4039 or 1-800-837-1255.

  Examines techniques used to shape metal products, including sand, permanent-mold, centrifugal and die casting; forging, extrusion, powder and sheet metal forming and wire drawing.

- *Working with Metals in the Plant: Heat Treatment.* VHS, 13 min. 1992. Buffalo, Illinois: Telemedia Inc. Ph: (708) 808-4039 or 1-800-837-1255.

  Discusses basic principles and applications of heat treatment for metals (mostly iron and steel). Topics include: annealing, hardening, tempering, use of oxyacetylene torch, welding, tool/machine repair, castings forgings and use of furnaces.

  Show films on these topics from local technical institute film libraries:

  - Hand Tools

    Since the machinist makes continuous use of hand tools in the shop, their proper use and care is important. Safety procedures for specific hand tools are described.

  - Hand Hacksaws and Files

    Explains and demonstrates how to use two simple hand tools in the machine shop.

  - Sharpening Drill Bits

    Machinists must know two methods of grinding twist drills: on a pedestal grinder manually and with a precision drill point grinder. Both methods are demonstrated in this program.

Secure Loads and Operate Equipment for Lifting

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to secure loads competently, give and receive appropriate signals, and safely lift, hoist, and move loads.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify natural and fibre ropes, describe the maintenance of fibre ropes, and identify eight knots, bends, and hitches.	• Have learners complete relevant learning tasks in *Carpenter Competency I: Use Rigging and Hoisting Equipment: Competency I-2: Describe Fibre Ropes and Tie Knots, Bends and Hitches.*
• Tie knots, bends, and hitches.	• Have learners complete the practical competency in *Carpenter Line I: Use Rigging and Hoisting Equipment: Competency I-2: Describe Fibre Ropes and Tie Knots, Bends and Hitches.*
• Select lifting and hoisting equipment, and describe the care and maintenance of slings, straps, and hitches.	• Have learners complete relevant learning tasks in *Carpenter Line I: Use Rigging and Hoisting Equipment: Competency I-3: Use Hoisting Equipment.*
• Identify signals and describe safe procedures for lifting, hoisting, and moving loads.	• Have learners complete relevant learning tasks in *Heavy Duty Mechanic: Line E: Lift Loads: Competency E-2: Use Lifting and Hoisting Equipment.*
• Lift, hoist, and move loads safely with crane, motorized forklift, manual forklift, and hoist. Identify jacks and describe safe procedures for use, care, and maintenance.	• Have learners complete the practical competency in *Heavy Duty Mechanic: Line E: Lift Loads: Competency E-2: Use Lifting and Hoisting Equipment.*
• Use a variety of jacks safely.	• Have learners complete relevant learning tasks in *Heavy Duty Mechanic: Line E: Lift Loads: Competency E-3: Use Jacks, Stands and Blocking.*

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Examine the Basics of Automechanics

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to describe the drive train of an automobile and perform a repair or maintenance task on a vehicle.

Note: Some consideration should be given to assisting learners in obtaining a driver's licence.

Specific Learning Objectives	Teaching/Assessment Strategies
• Describe safe working practices for the automechanics shop	• Show the video, *Auto Shop Safety*, or similar audio-visual. Highlight and discuss the major points.
• Identify and describe uses, care, and maintenance of basic mechanical hand tools.	• Bring a mechanics tool box into class. Ask learners to identify each tool by its proper name and any nicknames they know of. Describe how the tool is used and in what circumstances. Pass the tools around the room so everyone gets a close look while you are talking. If this is not your area of expertise, invite a female automechanic in to provide this workshop.
• Describe the ignition, drivetrain, and energy systems of an automobile.	• Arrange for an automechanics instructor to give workshops covering the drivetrain and ignition systems of a car. Ask learners to describe why regular tune-ups are necessary on some cars and done infrequently on others.
	• Ask learners to identify as many energy systems as possible that could be used to propel an automobile, highlight which ones are currently being used most, and where research dollars might most effectively be applied, and why.
• Safely complete a repair or maintenance task on a car under supervision in the shop.	• In working groups, and using several of the learners' vehicles, have them complete tune-ups, oil changes, diagnostics or other tasks approved by the mechanics instructor, keeping in mind safety and good work habits. Starting with simple tasks, allow the tasks to become as complex as learners can handle.
• Describe occupations in the automotive industry.	• From manufacture to transportation and repair and service, have learners create a web of as many related occupations as possible, and select three to research and present to the class. Use material from the Canadian Automotive Repair and Service Council (CARS), the Auto Parts Sector, and the Auto Manufacturing Sector and the Internet.

RESOURCES

Books

- CARS. *Careers in Motive Power.* Ottawa: Canadian Automotive Repair and Service Council, 1993. Ph: (613) 782-2402

  Two year curriculum delivered in a number of colleges across Canada. Includes front office, sales, parts and service occupations.

- Province of British Columbia. *Automotive Service Technician.* Victoria, 1994.

  Full line of competency-based learning materials.

- Human Resources Development Canada has many resources on occupations in these sectors, including Sector Studies for CARS, Auto Parts, Auto Manufacturing, Trucking, etc; the National Occupational Classification; Internet sites, etc.

Films and Videos

The following Meridian videos have been selected by the BC Automotive articulation committee and are available in BC through AEMAC and through the Canadian distributor: McIntyre Media. Each costs $95. Ph: 1-800-565-3036.

- *Automotive Computer System Operation*

  Features easy-to-understand language and computer-generated artwork to explain how a computer system uses information from sensors to control the operation of other devices and systems. Sensors and actuators are broken down into basic categories since many use similar physical properties during operations. Item No. 5161.

- *Heating and Air Conditioning Operation*

  Automotive Measurement—Examines how to use the precision measuring tools essential to auto mechanics. Demonstrates the use of micrometers, dial indicators, feeler gauges, plastigauges, dial bore gauges, straight edges, and other tools essential to the trade, while showing actual auto part measurements. Item No. 5124.

- *Auto Shop Safety*

  Stresses that if safety rules are not followed, many situations in an auto shop cause serious injury or even death. Running engines, moving cars, cars on jack stands or being raised with a floor jack, open fuel lines, etc. all have the potential to cause a catastrophe. Methods for preventing accidents are stressed. Item No 5160.

- *Vehicle Maintenance and Fluid Service*

  Presents crucial information for anyone owning or operating an automobile. Covers all the basic inspections and service operations needed to keep a car running safely and dependably and is ideal for service station attendants, driver education courses and first-year classes in general auto mechanics. Item No. 5121.

- Other titles from this source include: *Starting System Service; Starting System Operation; Steering Systems; Brake Systems; Fuel Systems.*

Explore Basic Plumbing Skills

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to assemble pipes, tubing, and fittings, and solder tubing and sheet metal. This unit may take approximately three days.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify plumbing, pipefitting, and gas fitting occupations	• Brainstorm jobs that require plumbing and pipefitting skills. Ask learners to develop a related set of questions to ask a qualified tradesperson (female if possible) who will come into the class to work with them on the practical competencies.
• Assemble pipe, tubing, and fittings.	• Have learners read *TRAC Common Core Learning Guide, Line L1-L3*, "Use Fastenings and Fittings, cut threads and assemble pipe, tubings and fittings". Discuss the most effective means for removing and replacing broken threaded fasteners.
• Describe hose construction and fittings.	• After reading Learning Task L-4, learners can present the varieties and uses of hoses and the reasons for, and accurate applications of, the variety of fasteners.
• Identify bonding agents and their applications.	• Using material in *L-5* as a base, assign several small groups of learners a different bonding situation, and have them research and present to the class the most current and effective method of bonding, using glue, epoxy, contact cement and other adhesives, and solder.
• Bond tubing and sheet metal.	• Have learners demonstrate competency in cutting internal and external threads; assembling plastic and metal tubing to a fixed design; soldering tubing and sheet metal. Have learners complete a theory test for this unit.

RESOURCES

Books

- Province of British Columbia. *TRAC Common Core Learning Guide L—Use Fastenings and Fittings.* Victoria, 1987. Distributed by the Open Learning Agency. Ph: 1-800-663-1653.

  Brings a wide variety of cross-trade applications into an easily understandable whole.

Develop Basic Skills in Oxyacetylene Cutting, Welding, and Brazing

Learning Outcomes

Upon completion of this unit, learners will be able to demonstrate competency in theory and basic practical skills for oxyacetylene cutting, welding, and brazing.

Note: Gas and fire, molten metal, and the fear of explosion are significant issues for everyone. Women can exhibit reluctance to become involved in this area, often due to lack of exposure. It occasionally takes strong support and encouragement to get some of them through the initial hands-on practical work. However, it is well worth the effort, as many discover hidden talents and the sense of accomplishment and personal competency is tremendous. If this is not your area of expertise, invite a female welding instructor to take learners through the theory and practical aspects of this whole unit.

Videos are used extensively in this topic to provide learners with a clear, visual sense of the practice.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Identify components and handling procedures for oxyacetylene cutting and welding.	• Show videos such as, *Welding Equipment, Accessories and Shop Safety (No. 1).* • Have learners complete *TRAC Common Core Learning Guide, Line J-1 Oxyacetylene Cut and Weld,* learning tasks 1-6, or *Outdoor Power Equipment and Motorcycle Service Technician (OPE) Competencies F-1 & F-2.*
• Assemble, test, and disassemble a portable oxyacetylene outfit.	• Show videos such as, *Set-up and Shut down of Oxyacetylene Welding Equipment (No.2),* and *The Three Types of Oxyacetylene Flames—Neutral, Oxidizing, Carburizing (No. 3).*
• Cut, weld, and braze safely.	• Have learners complete *TRAC Common Core Learning Guide, Line J-2* learning tasks 1-2 or *OPE competency F-2* and practical competencies, which cover assembling a portable oxyacetylene outfit and testing for leaks, and lighting, adjusting, shutting down and disassembling.
	• Show videos such as, *Cutting Metal with a Combination Torch, Piercing, Cutting Holes and Cutting 45 Degree Bevels with Cutting Torch, Puddling and Running Beads with Oxyacetylene (No. 5), Oxyacetylene Welding T-Joints, Lap Joints, Corner Joints, and Edge Joints.* Have learners read and complete practical OPE competencies F-3, F-4 & F-5, covering cutting, welding and brazing mild steel.
	• Show videos such as, *Bronze Welding in Flat and Horizontal Positions (No. 11).*

RESOURCES

Books

- Province of BC. *Outdoor Power Equipment and Motorcycle Service Technician* (OPE). Victoria, 1995. See Use Safe Work Practices for Review.

Films and Videos

Videos mentioned for use on this topic may be available at your local technical training centre.

- *Welding Equipment, Accessories and Shop Safety (No. 1).* 14 min. SPECT, 1980.
- *Set-up and Shut Down of Oxyacetylene Welding Equipment (No. 2).* 14 min. SPECT, 1980.
- *The Three Types of Oxyacetylene Flames—Neutral, Oxidizing, Carburizing (No. 3).* 10 min. SPECT, 1980.
- *Cutting Metal with a Combination Torch.* 11 min. SPECT, 1980.
- *Piercing, Cutting Holes and Cutting 45 Degree Bevels with Cutting Torch; Puddling and Running Beads with Oxyacetylene (No. 5).* 11 min. SPECT, 1980.
- *Oxyacetylene Welding T-Joints, Lap Joints, Corner Joints, and Edge Joints (No. 10).* 12 min. SPECT, 1980.
- *Bronze Welding in Flat and Horizontal Positions (No. 11).* 12 min. SPECT, 1980. [See additional resources in the unit, "Use Basic Measuring, Layout, Hand and Power Tools in the Metal Shop".]

Use the Principles of Electrical Devices

LEARNING OUTCOME

Upon completion of this unit, learners should be able to use the principles of electrical devices to construct simple electrical projects. This workshop takes approximately five days. When combined with electronics, it would be seven to ten days.

Note: As this is a complex subject, often accompanied by fear of the unknown, it is useful to introduce this unit in a workshop format with a knowledgeable instructor who is comfortable teaching beginners. This is a practical introduction to electronics, explored more fully in the next unit. It may be useful to examine both units before proceeding, to determine how to interrelate them.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Describe the basic principles of electricity and electromagnetism. • Identify and use simple component parts for electrical circuit.	• Have learners read *Introduction to Electronics and Electricity* or *Outdoor Power Equipment (OPE) Competencies D-1, D-2, D-3 & D-6 (principles of electricity, circuits, electromagnetism and meters).* Ask them to form study groups to examine the material and make presentations to the class on each section, describing the journey of electrons through a circuit with drawings or other visuals, or building and using working models where appropriate, such as assembling an extension cord, a electric light and switch, and a receptacle that can be plugged in to complete the circuit and then tested.
• Identify electrical devices and measuring instruments.	• Ask learners to observe an electrically powered toy, toaster, or hairdryer in action. Have them disassemble it, identify parts, and define terms and functions of those parts. Ask them to explain the principles at work here, and have them take measurements with meters, then make schematic drawings. Learners then reproduce those circuits using other materials and alter those circuits to experiment. Discuss what other applications might be possible using those principles.[42] (See the Resources section for educational circuit and testing kits.)
• Describe the diagnosis and repair of electrical problems.	• Introduce *OPE competency D-5*, "Test Circuits and Perform Circuit Repair." Discuss the characteristics of solder and fluxes, and analyse in what situations they would be used, and with what tools; also discuss alternatives to soldering.
• Safely troubleshoot, solder, and de-solder electrical devices using a variety of techniques.	• Ask learners to research and describe safe, effective techniques for soldering using texts, entry-level learning materials, or videos. Practise soldering.
	• Have learners complete *OPE D-5* or *Introduction to Electronics and Electricity practical competencies.*

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[42] Thanks to Mildred Minty and the Industrial Training Division of the Department of Education in Newfoundland for use of material from their Blinkers workshop. Used with permission.

RESOURCES

Books

- Grzetic, Brenda. *Introduction to Electronics and Electricity*. WITT National Network, London, Ontario, 1997. Ph: (519) 453-2105

  Excellent material, developed for use in WITT exploratory courses by an electronics technologist.

- Province of BC. *Outdoor Power Equipment and Motorcycle Service Technician (OPE)*. Victoria, 1995. See Use Safe Work Practices for Review.

Films and Videos

These videos have been recommended by the BC Electrical articulation committee.

- *Electrical Principles*. VHS, 30 min. Meridian. Canadian distributor: McIntyre Media. Ph: 1-800-565-3036.

  This live-action video introduces the basics of electricity. Computer animation adds interest and excitement as the video comes alive in its coverage of atoms, conductors, insulators, free electrons, voltage, current, resistance, magnetism, attraction-repulsion, electromagnets, a simple circuit and other electrical principles, ideal for courses in electricity, physics, science, automotive, and technology. Item No. 5129

- *Electrical Circuits: Ohm's Law*. VHS, 25 min. Meridian. Canadian distributor: McIntyre Media. Ph: 1-800-565-3036.

  This video uses 3D animation and live action to make basic electrical circuits come to life. The properties of series, parallel, and series parallel circuits are easy to grasp when you can see the electrons flow through each circuit leg in each circuit type. Ohm's Law is illustrated with animated pie charts and basic calculations that isolate each section of the circuit. A must for introductory electricity-electronics, auto mechanics, and technology courses. Item No 513

- *Electronics Components: Part 1*. VHS, 20 min. Meridian. Canadian distributor: McIntyre Media. Ph: 1-800-565-3036.

  Computer animation is used to make basic electronic components come to life in this very informative training tape. The principles of semiconductor materials, transistor operation, transistor construction, transistor types, diodes, and other basic electronic components are illustrated with very interesting experiments and computer animation. This is a "must tape" for courses in electronics, electricity, motor controls technology, air conditioning, auto mechanics, physics, science, etc. Item No 5139

Educational Kits

- Circuit-Test Electronics Ltd. *Educator Catalogue—Electronic Kits International* (EKI), 1995. 2113 West 4th Avenue, Vancouver, BC V6K 1N7. Ph: (604) 738-2944; Fax: (604) 738-3002.

  A Canadian company with electronics distributors across Canada. Solder and solderless wiring breadboard kits ($9.95 up), car burglar alarm ($39.95), robot blinker ($14.95), fish caller ($17.95), transmitter learning kits ($14.95 up). Costs are approximate.

RESOURCES CONT.

- Heath/Zenith. *Basic Soldering Course.* #ET3133. (Available from Electrolab in Ontario, and Heathkit Educational Systems on the Internet: www.heathkit.com)

  Provides background reading material and all the component parts to design and solder simple, electronic test circuits. Cost: approximately $29/person.

- *Heathkit Microprocessor Trainer.* #ET3400.

  This is a "naked computer," a microprocessor training system on a breadboard that can be programmed. An excellent simple training tool.

- *Nuts and Volts.* An electronics magazine full of electronic kit information. Ph: 1-800-783-4624.

- *Heathkit Educational Systems.* Ph: (616) 925-6000 or 1-800-253-0570. On the Internet: www.heathkit.com. Canadian distributor: Electrolab in Ontario. Ph: 1-800-267-7482.

  Concepts of Electricity, Electronic Fundamentals, Soldering, etc. Heathkit has a long history of do-it-yourself electronic kits and in-school educational courses and kits.

Explore Electronics Technology Applications[43]

LEARNING OUTCOMES

Upon completion of this unit, the learners will be able to describe career potential in the electronics field and demonstrate the application of electronics technology in some common devices.

Note: This unit is a model for exploring a variety of electronics principles. Please feel free to use any other objects or training devices that would prove useful for your particular situations. This is approximately a five-day workshop. If this is not your area of expertise, arrange for a female electronics technician or technologist to lead this unit.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Describe the variety of jobs that are available in the electronics field.	• Ask the class to brainstorm all of the occupational areas that currently make use of electronics technology.
	• Have learners choose a particular area and ask them to research and make a presentation that outlines possible career paths in electronics. Use Internet resources found in the Labour Market Information section of On-line Careers: www.etc.bc.ca/provdocs/careers/labour.html to incorporate a discussion of the wages and working conditions in their chosen areas and define the educational requirements and training options.
• Demonstrate soldering and electronic assembly techniques.	• Using a kit such as the *Heathkit Basic Soldering Course*, conduct a soldering and electronic assembly workshop that results in a testable circuit. Try to hand out the reading material from this kit several days before starting the practical application.
• Identify and describe the common electronic functions of component parts	• Brainstorm and discuss the uses of individual component electronics parts (e.g., resistors, diodes, capacitors, IC chips).
• Use a multimeter in a variety of applications.	• In a workshop setting, have learners use a multimeter to measure voltage, resistance, and to check continuity. They should be able to describe the application of this device in both the home and automobile environment.

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[43] Thanks to Terry Avery, Malaspina College for most of this unit.

Specific Learning Objectives	Teaching/Assessment Strategies
• Describe, assemble, and test electronic circuits.	• Make a presentation introducing the principles of electronic circuits. Use as examples applications most participants will be familiar with (e.g., automatic control of street lighting). It is not important to explore all items in depth, but rather to relate familiar "things" to electronics. • Have learners assemble and measure "breadboarded" circuits (electronic components assembled as a circuit on a test board). A useful example would be a one transistor, light-dependent, resistor-lamp control circuit.
• Explore digital electronics.	• Introduce a small amount of background material that will permit participants to setup, test, and fault-find integrated circuits. This will enable them to begin to understand the concepts of computer decision making, communicating with machines in "offs" and "ons," and computer programming.
• Assemble digital electronic circuitry.	• Have learners assemble and "breadboard" digital circuits, including integrated circuit gates, decoders, counters, and displays. Include the use of a Digital Trainer and Logic Probe.
• Demonstrate familiarity with microprocessor architecture and basic machine language programming.	• Using a tool such as the *Heathkit Microprocessor Trainer*, have learners name and define the use of the various component parts of the microprocessor, and practise basic machine language programming.

RESOURCES

Books

- Grzetic, Brenda. Introduction to Electronics and Electricity. WITT National Network, London, Ontario, 1997. Ph: (519) 453-2105
- Province of British Columbia. *Electronics. L - Line: Using Computers.* Available through the Open Learning Agency: 1-800-663-1653.

Educational Kits

- Circuit-Test Electronics Ltd. *Educator Catalogue—Electronic Kits International* (EKI), 1995. 2113 West 4th Avenue, Vancouver, BC V6K 1N7. Ph: (604) 738-2944; Fax: (604) 738-3002.

  A Canadian company with electronics distributors across Canada. Solder and solderless wiring breadboard kits ($9.95 up), car burglar alarm ($39.95), robot blinker ($14.95), fish caller ($17.95), transmitter learning kits ($14.95 up). Costs are approximate.

- Heath/Zenith. *Basic Soldering Course.* #ET3133. (Available from Electrolab in Ontario, and Heathkit Educational Systems on the Internet: www.heathkit.com)

  Provides background reading material and all the component parts to design and solder simple, electronic test circuits. Cost: approximately $29/person.

- *Heathkit Microprocessor Trainer.* #ET3400.

  This is a "naked computer," a microprocessor training system on a breadboard that can be programmed. An excellent simple training tool.

- *Heathkit Educational Systems.*
  Ph: (616) 925-6000 or 1-800-253-0570.
  On the Internet: www.heathkit.com. Canadian distributor: Electrolab in Ontario.
  Ph: 1-800-267-7482

  Concepts of Electricity, Electronic Fundamentals, Soldering, etc. Heathkit has a long history of do-it-yourself electronic kits and in-school educational courses and kits.

- *Nuts and Volts.* An electronics magazine full of electronic kit information. Ph: 1-800-783-4624.

Explore Basic Computer Skills[44]

LEARNING OUTCOME

Upon completion of this unit, learners will be able to demonstrate basic computer skills in a variety of applications.

Note: If this is not your area of expertise, bring in a qualified (preferably female) instructor to assist with this topic.

Specific Learning Objectives	Teaching/Assessment Strategies
• Analyse and discuss reasons for reluctance or fear in relation to computers (technophobia)	• Ask learners to form small groups and describe their previous experience with computers, and their attitudes about using them. Encourage them to identify the root causes of those attitudes.
	• Show the film, *Headstart: Meeting the Computer Challenge*. Discuss the issues raised in the film, and suggest that the more we can learn for ourselves, the less intimidated we become. To quote Cindy Hale, a carpenter turned computer instructor: "If our grandparents can change from horse and buggy to cars and airplanes, we surely can learn how to use this little machine in front of us here!"
• Identify the impact of computers on daily life.	• Brainstorm and discuss areas where computers have had an impact on work, play, sports, transportation, etc.
• Explore the basic principles of operating computers and programs.	• Distribute and discuss Handout 1: You Already Know a Lot About Computers. Ask learners to describe, in their journals, one thought and one feeling they have about troubleshooting, and one reason they think it may prove a useful skill to develop.
• Describe the functions of a computer.	• Ask the class to discuss the differences between system software, utility software, and application software.
	• Ask learners to brainstorm all of the possible uses of a computer. When complete, assist them by outlining, through a presentation or handout, computer functions; 1) input: receive data to be processed; 2) arithmetic: + - x / ; 3) logical: computer compares data > < =; 4) output: display processed information on monitor or print it using a printer; 5) storage: electronically store data on an external device for future processing and reference; 6) communications; 7) art/animation. Use *Use Basic Computer Skills, Competency C-4, Commercial Transport Repair*, "Describe Personal Computers" for clear, plain language descriptions of this material.

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[44] Thanks to Cindy Hale, Splinter Group, Powell River, BC, for the introductory computer course she developed, from which most of the material for this unit has been drawn

Specific Learning Objectives	Teaching/Assessment Strategies
• Examine the hardware and software components of a computer, and describe the difference between a mainframe and personal computer.	• Using an real computer, remove the case and discuss the various parts of the hardware (e.g., CPU, IC chip, mother-board, RAM/ROM, monitor, keyboard, hard and floppy drives, port devices) and describe their functions. Examine a diskette that has been cut in half to see inside.
• Describe common peripherals for a personal computer and the occupations required to create and maintain them.	• Ask learners to identify all of the additional pieces of equipment necessary to all of the functions brainstormed earlier (e.g., mouse, modem, optic mouse, scanner, graphics pen, light pen, touch screen, robotics arm, etc.) Use *L-1 Electronics* as background. • Brainstorm potential occupations in the computer field. • Bring into class examples of a variety of printers (e.g., daisywheel, dot matrix, laser, ink-jet, thermal transfer). If possible, have learners form small groups and take the printers apart to examine how they function. Each group should report back on the functioning process and the kinds of occupations that would go into the manufacture, maintenance, and repair of their printer.
• Explore operating systems and computer software applications, including - disk operating system (DOS) - Windows - Macintosh - word processing - spreadsheet - database - electronic mail - Internet - graphics - CAD/CAM	• Outline the types of software applications and brainstorm in what situations participants might use them. Use *L-3 Electronics* as background. • Ask learners to read Learning Guide *C-4 Commercial Transport Repair*, or *L-2 Electronics*, and come prepared to class to make a presentation that includes a description of what DOS is and does, and how to load it into the computer. Compare it with Windows system and the Apple Macintosh system. Allow time at the end of the presentation for learners to ask questions.
• Identify and practise using operating systems.	• Have learners 'boot' DOS, display directory on a computer, and experiment with utility commands: enter time, enter date, display directory, format a diskette, copy files, delete files, rename files, perform a "soft boot", etc. Experiment with Windows in the same way, using File Manager or Windows Explorer and other features. Use *L-2 Electronics*.
• Describe and practise using file development, storage, and retrieval.	• See exercises in Handout 2: Using a Text File.

Specific Learning Objectives	Teaching/Assessment Strategies
• Practise using a number of software applications, including spreadsheet, database, comprehensive office program, CAD/CAM.	• Using a variety of software applications, have learners complete a project using IBM or Apple Macintosh type computers. Practise installing programs, creating autoexec.bat files, and running programs. They can practise saving and backing up, and describe why this is important. • It is extremely useful to apply these skills in workshops in any of the following shops or labs: drafting, estimating, machining, or inventory control. A hands-on approach would be best, but in some disciplines observation may be the only option. • As learners express stronger interest in a particular computer software area, arrange for specific workshops dedicated to CAD or CAM, computer animation, or robotics lab.

RESOURCES

Books

- Province of British Columbia. *Electronics. L - Line: Using Computers.* Victoria, 1997. Available through the Open Learning Agency: Ph: 1-800-663-1653.

  Used in apprenticeship electronics programs, this set of modules used competency-based materials to explore indepth studies in uses and operations of computers and a wide range of peripherals, a range of operating systems, and a variety of software applications. Some material useful for set up and repair is covered.

- Province of British Columbia. *Commercial Transport Repair, Competency C-4 Use Basic Computer Skills.* Victoria, 1996. Distributed by the Open Learning Agency Ph: 1-800-663-1653.

  Competency-based, self-paced learning guides with self-tests. The material covered includes hardware, software, peripherals, how to use the computer, operating systems, and generic and specific software applications. Short, concise, and well-rounded basic course.

- Province of British Columbia. *Adult Applied Academics Program — Applied Computer Studies: Advanced Level IRP.* Victoria. 1997. Distributed by the Open Learning Agency Ph: 1-800-663-1653.

  For a series of learning activities and instructional strategies, this is very useful and applicable material.

- *Computing Essentials — Brief Version* (Annual Edition). McGraw-Hill. 1997 et al.

  An excellent text, thorough and broad-based information.

- *How Computers Work.* Ziff-Davis Press. (also available with CD-ROM illustrations/tutorial)

- Kamin, Jonathan. *Dos 6.2 — Everything You Need to Know.* 1994.

  Covers many back versions of Dos and Shell as well.

- Roulledge, Gerry. *Using Dos — The User Friendly Reference.* (6.2) QUE. 1995.

  Excellent and accessible.

- *Women and Microtechnology.* Ottawa, Ontario: The Canadian Advisory Council on the Status of Women, 1985. (See the Examine Labour Market Trends and the Impact of Technology on Opportunities in TTO unit for a review.)

- Brecher, Deborah L. *The Women's Computer Literacy Handbook.* California: New American Library, 1985. May be ordered for college libraries.

  Fostering computer literacy in women is the goal of the author of this highly acclaimed book. It describes many computer concepts as very similar to ideas and objects we relate to every day. Using familiar analogies, Brecher demystifies computers from software to circuit boards. She also points out social and environmental concerns that have emerged through the development and use of computers, and some models to overcome these drawbacks.

Films and videos

- *Head Start: Meeting the Computer Challenge.* 27 minutes, (video 1/2") (film 16 mm), N.F.B.

  Intended for women in the paid workforce and those about to choose a career, this film (video) urges viewers to acquire the skills for careers involving new technologies. Support material available.

You Already Know a Lot About Computers[45]

Whenever we are faced with a new type of machinery, or new technology, such as computers, the first reaction of most women is to panic—to view the new equipment as totally foreign and assume that any previous knowledge of other systems will not be relevant. While it is true that with each new system there are lots of new and different things to learn, often, methods of analysing a problem, and even solutions learned from previous systems and problems, can help speed up the learning process with a new system.

Let's look at the example of a computer. Computers are divided into two major parts, software (the instructions that control and operate a computer—that tell it what to do) and hardware (all the material aspects of the machine, its screen, keyboard, printer, and central processing unit).

Software

Software is usually made up of "programs" that do distinct tasks. Programs that manipulate text and drive a printer are called "word processors." Programs that allow the operator to enter financial information and produce accounts are called "spreadsheets," and programs that allow the operator to manipulate a large amount of facts and figures (called data) and develop relations and information about these items are called "database" programs.

So, you know nothing about computers and they are a mystery that in no way relates to anything else you've ever done! How about programming (the writing of instructions for a computer in order to make it do some function)? Well, if you've ever read and followed a recipe, then you have the fundamentals of computer programming!

A computer program consists of three parts: inputs, operations and procedures, and outputs—just as a recipe consists of three parts: a list of ingredients, instructions, and final product.

In recipes, the first thing you see is a list of ingredients. What you put into a product determines what comes out. Of course, if you are making something sweet and don't add a sweetener, you are not going to get a sweet end product. A computer program works the same way—often described by the unappetizing formula of "garbage in, garbage out." In both cases, your final product may seem a long way from the raw ingredients, but it is absolutely dependent upon them.

Next come the instructions—how to combine the ingredients and what to do to them. You know that if you don't follow these instructions, your final product will be messed up. For example, if you are baking a pie, you must make a pie crust. If, on the other hand, you decide to innovate and don't bother with the crust and simply bake the filling, you may have an acceptable product, but it's certainly not a pie, and not what you set out to make! Similarly, the procedures in a computer program must be followed exactly; the order of the procedures, the exact locations and "ingredients" are all essential, or you may get an unexpected end product, or no end product at all.

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[45] "You Already Know a Lot About Computers" was written in 1987, by Elaine Bernard, machinist and authority on Technological Change. She is currently Director of Labour Studies, Harvard University.

In computers and recipes, there are distinct, repeatable methods for doing certain things—just as there are for making a pie crust. In computer programming these are called "subroutines." These subroutines can stand on their own, just as a pie crust recipe can regardless of the filling. In fact, once you've got a good pie crust recipe, you will stick to it. Similarly, complex programs can be developed from your own subroutines. Using subroutines helps you to analyse and troubleshoot problems, by isolating the problem spot. With a pie crust subroutine, you know it works consistently, so if you add it to a new recipe, it will reduce the possibility of any problems arising.

The final step of a recipe or a computer program is the output or final product. Once you get to be an experienced cook you can taste a final product, smell it, touch it, and analyse where you have gone wrong. Similarly, with a computer program, an experienced, analytical programmer can see where the problem is with a specific input statement (or a procedure) that is not quite right. It's as easy as apple pie.

Hardware

Let's look at an example of a computer, with a printer and a word-processing program. Carefully following the instructions in the manual, you try and start up (load) the word-processing program onto the computer. You will act like a cook, attempting to follow a recipe for the first time, so you cannot skip over steps, but have to read slowly and carefully. Don't worry, speed will come if you don't try and go too fast at the beginning.

But, suppose that nothing happens. Well, you do know something about computers—they run on electricity—and you certainly know something about electrical equipment, from toasters to drills. So, check: Is it plugged in? Is it turned on? Is there a separate plug and switch for the computer and the screen? Is the video display terminal (screen) turned on and plugged in? If you get no response from the system, it may indicate a power problem.

O.K, so now it's working; you see something on the screen and when you hit a key it echoes on the screen. Now, suppose you want to try and print something from the computer on the printer. Once again, nothing!

We know we've got to make sure everything is plugged in—but is there a wire (cable) going from the computer to the printer? There must be or how else can the information flow? Most printers (and this is explained in their manual) have a "self-test." This is a procedure that allows you to see if the printer (in isolation) works. Here's a key troubleshooting gem: check each major component in isolation. If the printer self-test works, then you know that the problem is not with the printer, but must be either with the computer hardware, computer software, or the cables connecting the computer to the printer.

Go back to the manuals. Analyse what should be happening. You are attempting to print a letter. Have you correctly typed the command "print"? Computers are fussy; if you make a typo, it will often completely ignore your instructions or tell you "bad command" (a most confusing statement). Try it again.

If it appears to take the command, but nothing happens, perhaps the text is not getting through to the printer. Check the printer cables. Are they plugged into the correct port, both in the computer and the printer?

A good method of troubleshooting is analysing the functions into distinct steps, and finding the block—the location where things that should be happening are not. This does not necessarily mean that this is the trouble spot, but it should allow you to follow the process back until you can identify the problem. Why troubleshoot yourself? Why not simply ask someone else? Well, eventually you may have to, but, by first analysing the problem yourself, you may be able to correct the error. At the very least, you will be able to speed up the correction process by giving a clearer description of the problem to the person who comes to help you.

Using a Text File

Review Exercise: Format a diskette.
[Format b:] "Format another?" [n]
Repeat the exercise with a second operator.

1. Create a Text File

1.1 DOS refers to the keyboard as CON (short for console). The [COPY CON] command tells DOS to copy the console (i.e., to copy what is entered on the keyboard).

1.2 Create a text file by telling DOS to copy what you type from the keyboard onto the blank disk in drive B. [Copy con b:]

1.3 You must enter a filename with the [Copy con] command to identify the new file.

1.4 Exercise: At the A> prompt, enter:

[b:note.doc] [R]
[February 26,1986] [R]
[Dear Mary]
[Just a note to remind you]
[that our meeting is at 9.] [R]
Alice [R]
Press (Ctrl-Z) to tell DOS that is the end of the file.
Press [R] after [Ctrl-Z] to enter that command.

At the A> prompt, enter [dir b:] to check that the file is listed on drive B's directory. This function is frequently used for creating autoexec.bat and other directional files.

1.5 This function has been made delightfully easy by word processing programs and by Windows Operating System, which often have excellent HELP functions. Practise using both systems.

2. Read a Text File

2.1 At the A> prompt, enter [type b:note.doc].

2.2 Windows File Manager or Windows Explorer allows you to click twice on a file to read what is in it in an accompanying word processing program.

3. Print a Text File

3.1 The printer is known to DOS as PRN.

3.2 [copy b:note.doc prn] brings name of list device (PRN). Press [R].

3.3 This can also be done easily from within a word processing, spreadsheet, or database program.

4. Copy a Text File copy file1 file2

4.1 To copy the file "note.doc" into another file named "letter.doc" enter [copy b:note.doc b:letter.doc] [R].

A directory listing [dir b:] now displays two files: note.doc and letter.doc.

4.2 To copy from one drive to another, you must include the drive names before the filenames.

4.3 Use [*.] to indicate all files with a specific label (e.g., [copy c:*.exe] means copy all executable files.

4.4 This can also be done easily from within Windows File Manager or Windows Explorer .

5. Erasing a Text File

5.1 To erase a file: [erase b:note.doc] [R].

A directory listing [dir b:] now displays only letter.doc.

5.2 To erase a file from drive B when you're in Drive B: [erase note.doc] [R].

5.3 Using wildcards in the erase command: Erase* is a powerful command. Make sure you know exactly which files will be erased and that you want all of them to be erased.

5.4 This can also be done from Windows File Manager or Windows Explorer using File, Delete commands, and is often accessible from within a word processing program.

6. Renaming a File

6.1 Rename command has two parameters: oldname and newname. Both the old name and he new name must be on the same drive. The Rename command DOES NOT move files from one drive to another. [Ren] is a short form for the Rename command.

Exercise: rename "letter.doc" to "memo.doc". From Drive B, [dir] [R] should display letter.doc; enter: [Ren letter.doc memo.doc].

Enter (dir] [R] memo.doc should be displayed.

6.2 Windows File Manager or Windows Explorer enables this function, and it must often be used to ensure that a document created has a three letter extender after a period to allow it to be recognized as "associated" and therefore a readable document (e.g., "letter.ltr," or "document.doc").

7. Combining Files Into One File

7.1 The copy command has two parameters: source and target. Source represents the files to be combined. Target represents the file that results from combining the source files. If you omit the target, DOS combines the source files into the first source file you specify. BE CAREFUL!

7.2 The format for the command is: (copy filename+filename newfilename].

The + symbol defines the files to be combined. The space after the last source file designates the new filename to be used.

8. Exercise: Practise for Test

8.1 Perform a cold boot.

8.2 Format a disk.

8.3 Create a text file containing the definitions of the following terms: a) computer
b) parameter.

Name the file and save it to your new, formatted disk in Drive B. Remove your new disk and take it to your instructor.

Investigate the Environmental Sector[46]

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to describe the components of the environmental sector, the science, technology and social factors involved in careers in this industry, and demonstrate an ability to analyze, think critically and problem solve environmental issues.

Note: Several of the exercises in this unit focus particularly on the development of the learners' abilities to work as part of a team.

Specific Learning Objectives	Teaching/Assessment Strategies
• Define and describe the environmental sector.	• Assign learners to read Handouts 1 and 2, and come to class prepared to compare and contrast, in a class discussion, the information contained in these handouts. - In what way are the documents interrelated? What are the underlying messages in each one? - Do they conflict or complement each other? In what ways? - For what audience is each document developed? - How can you tell? Which directions do the documents point you towards that you find exciting? - Did the Handouts spark any new learning for you? What was it? How can you pursue it? • Brainstorm a list of environmental activities in the leisure area that would require the development of technical skill sets. Break into small groups to define the skills and knowledge required by the activities on the list.
• Track the environmental implications of the production and transfer of goods.	• Using someone's lunch, or objects on a storage shelf in the classroom, invite learners to take each item in turn and describe: - What it is made of? - How were those elements extracted and brought to the production site? - What additional resources were used to do that? - What processes were used in production? - What waste was a side effect of that? - How was it packaged for shipment and storage? - How was the packaging produced and shipped? - How was the waste material handled? - How will the item be used? - What waste will be created in the process? - How will that waste be handled?

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[46] This module was developed for WITT National Network by Marcia Braundy, Journeywomen Ventures Ltd. It originally appeared in the *Orientation to Trades and Technology Curriculum Guide* published by the Province of British Columbia. (1986)

Specific Learning Objectives	Teaching/Assessment Strategies
	• Have learners work in study groups to research the changes, in any one of the preceding processes, that have been made because of environmental considerations or that have had a particularly strong environmental impact on the application of that process.
	• Brainstorm all of the occupations that were needed to fulfill these processes.
• Create an energy conservation plan for home.	• Ask learners to conduct an environmental audit of their homes, including energy use and waste management; and create a conservation and waste management plan to respond to the audit.
	• Where else might a plan like this be applied? Hotels? Universities? Industry? What modifications would be needed to make it effective in those settings? What occupations would be used in the planning process? The implementation?
• Investigate the components of the environmental industry and the public and private sector needed to avoid and respond effectively to an environmental disaster.	• Break the class into task groups. Using the Internet, have each group research the Exxon Valdez environmental disaster from a different perspective, each presenting a piece of the whole to the class. - What were the facts of what happened? - What are the points at which intervention could have averted the disaster or the effects of the disaster? - What technological developments might have assisted? (i.e., Hull materials? Sonar?) - What human or social factors caused or could have assisted in this situation? (i.e., Speed up pressures? Better management training?) - What elements of the environmental industry have been brought to bear on the resolution of this disaster? What occupations? - What role do volunteers play? - How are the efforts of all of these elements managed, and what communications features enable that? - What businesses exist in your geographic area that could assist in resolving an environmental disaster? - Where would you go for information?
• Explore the ways in which the environment sector is cross-sectoral.	• Create a Web with the environment sector at the centre. Using the list in Handout #4, depict with words and pictures the ways in which the environment sector can have an impact on all other sectors.

RESOURCES

Books

- *Ecotonos: A Problem Solving Decision-Making Simulation.* A multicultural problem solving simulation that allows learners to invent and experience new cultures. Order from Intercultural Press P.O. Box 700 Yarmouth, Maine 04096 Ph: (207) 846-5186
  Fax: (207) 846-5181

Software

- *Outpost.* A Computer Simulation game available in stores, which requires the setting up of a community on another planet.

The Environment Industry[47]

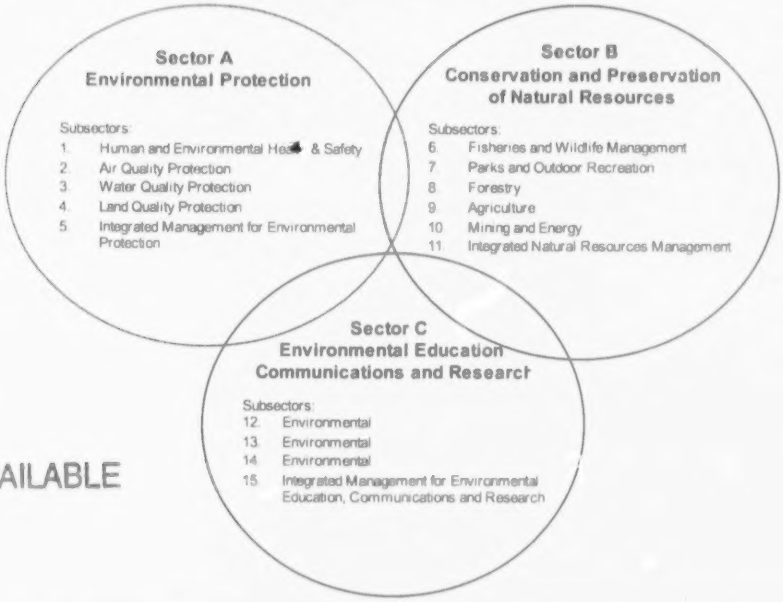
Canada has a strong and dynamic environment industry. It generates over $11 billion in domestic and international markets, employs over 150,000 people, and comprises some 4,500 environmental enterprises, most of which are small or medium-sized. It is one of Canada's fastest growing economic sectors. Just what is the environment industry though? Also, what kinds of career opportunities exist in it and what does it take to have an environmental occupation?

Since it was incorporated in 1993, the Canadian Council for Human Resources in the Environment Industry (CCHREI)[48] has been working hard to answer these questions. Some of them are not as easily answered as might first appear.

For example, take the first question: What is the environment industry? After extensive research, and after a lengthy validation process involving experts in industry, government and the academic community, CCHREI was able to come up with a Definition of Environmental Employment. But the Definition is far from simple.

One of the basic premises behind the Definition is that you need not work in the environment industry itself in order to have an occupation which involves the environment. For example, you could be an environmental chemist or environmental engineer

Sectors of Environmental Employment


Sector A
Environmental Protection
Subsectors:
1. Human and Environmental Health & Safety
2. Air Quality Protection
3. Water Quality Protection
4. Land Quality Protection
5. Integrated Management for Environmental Protection
Sector B
Conservation and Preservation of Natural Resources
Subsectors:
6. Fisheries and Wildlife Management
7. Parks and Outdoor Recreation
8. Forestry
9. Agriculture
10. Mining and Energy
11. Integrated Natural Resources Management
Sector C
Environmental Education Communications and Research
Subsectors:
12. Environmental
13. Environmental
14. Environmental
15. Integrated Management for Environmental Education, Communications and Research

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[47] This previously published material was written by Mary Ann Kenney of the Canadian Council for Human Resources in the Environment Industry and is used with permission.

[48] CCHREI is one of about twenty sectoral councils that have been established with federal seed funding to bring employers, workers, educators and governments together to address the human resource challenges facing the Canadian economy. Although launched with the help of government funding, the Council is an autonomous organization that is directed by the industry it serves and its stakeholders. See Handout # 3 for further information on Sector Councils.

and work in the mining or energy industries. Likewise, you could be a soil conservationist or reclamation consultant and work in the agriculture industry.

Because of this situation, CCHREI divided its Definition into three sectors: sector A (environmental protection), which includes those occupations which are found in the environment industry itself; and, sectors B and C (conservation and preservation of natural resources, and, environmental education, communications and research, respectively) which include those occupations which are found in other industries.

CCHREI then divided each of the sectors into 15 subsectors in which there is some overlap.

So what is involved in each of the sectors and subsectors, and what kinds of occupations exist in them? Following are some answers to these questions as well as a brief overview of the qualifications required.

Sector A: Environmental protection. This sector involves the supply of goods and services related to the prevention and mitigation of air, water, land and noise pollution. It also involves the development of standards and regulations for the protection of human and environmental health & safety.

1. Human and environmental health and safety

Subsector #1 involves the development and implementation of policies, standards, legislation and regulations which are aimed at maintaining or improving the quality of the environment, especially as it relates to human health and safety. Activities in this subsector include research, product and facility assessments, compliance monitoring, risk assessment and the recognition, evaluation and control of occupational hazards. Other activities include the development of technical standards, emergency response guidelines, worker health programs, and goods and services for noise pollution control. Several examples of the kinds of occupations which exist in this subsector include environmental laboratory manager, pollution control investigator, and director of environmental health & safety.

2. Air quality protection

Subsector #2 involves the supply of goods and services related to indoor and outdoor air quality protection. Activities in this subsector include the research and development of air pollution control equipment, systems and technologies. They also include control method identification, air quality testing and monitoring, air emission standards development, compliance monitoring, impact assessments, modelling, and meteorological studies. Several examples of the kinds of occupations which exist in this subsector include air quality meterologist, air quality service specialist, and clean air strategy manager.

3. Water quality protection

Subsector #3 involves the supply of goods and services related to water pollution control. Activities in this subsector include research and analysis, remediation, compliance monitoring, permitting, site characterization, environmental impact assessments, and the development of equipment, systems, programs and technologies which improve water quality. They also include the design, building and operation of water and wastewater treatment plants. Several examples of the kinds of occupations which exist in this subsector include chemical water treatment specialist, manager of fresh water programs, and water purification specialist.

4. Land quality protection

Subsector #4 involves the supply of goods or services related to the control of land pollution and soil contamination. Activities include the research and development of equipment, systems and technologies for solid and hazardous waste management. They also include soil remediation, environmental site and risk assessments, site selection and decommissioning, facility planning and operations, control method identification, testing, and compliance monitoring. Several examples of the kinds of occupations which exist in this subsector include composting technician, reclamation superintendent, and site remediation manager.

5. Integrated management for environmental protection

Subsector #5 involves the protection of the environment through the use of environmentally-responsible business management and operations practices. Environmental managers strive to improve the environmental performance of their organizations through the following activities: policy and objectives setting, planning, results measurement, program implementation, employee education, research, communications, emergency preparation, reporting, compliance to regulations, and the choice of facilities and technology. Several examples of the kinds of occupations which exist in this subsector include environmental analyst, general manager of environmental risk, and environmental affairs director.

Qualifications for Sector A

In order to work in subsectors 1 through 5, you will most likely need a university degree or technical diploma in one of the natural or applied sciences (i.e. biology, chemistry, engineering, etc.). In addition, you will require knowledge of:

- environmental regulations and permitting processes
- reporting requirements and procedures
- pollution, dispersion, risk assessment and prevention/control technologies
- sample methodologies, sample packaging and instrumentation related to pollution assessment and control
- computers (including programs, software, usage, etc.)
- quality assurance / quality control (QA/QC) procedures
- safety procedures
- environmental sciences.

It is not uncommon for individuals with technical diplomas to progress in their work to occupations typically held by individuals with university degrees. To achieve this progression, these individuals must usually upgrade their skills, particularly in the areas of project management, data interpretation, sampling methodology and program design.

In addition to the academic and knowledge qualifications listed above, individuals working in Sector A also require specific sets of generic skills. Generic skills are either natural or have been developed over time through everyday experiences. They may be applied to many situations in life and in work, and can be transferred from one occupation to another, and one industry to another. Generic skills influence the way individuals apply their technical skills, and are often the deciding factor in employment competitions between candidates with equivalent technical qualifications. The generic skills which are most important for individuals working in Sector A include the aptitudes or abilities for:

- communications
- professional integrity
- efficiency (producing results with minimal waste of time and resources)
- analytical thinking and problem solving
- synthesis of information and preparation of adequate recommendations
- decision making
- project development and implementation
- follow through and production of results

- listening and asking the right questions
- flexibility and adaptability to new situations
- cooperation and team work.

Sector B: Conservation and preservation of natural resources. This sector involves the supply of goods and services related to the conservation and preservation of the resources derived from air, soil, water and living organisms. Some of these activities may involve the development of legislation and regulations for the protection of natural resources.

6. Fisheries and wildlife management

Subsector #6 involves the supply of goods or services related to the protection and management of fishery and wildlife resources. Activities in this subsector include the development of legislation, regulations and management programs that contribute to the conservation and preservation of wildlife and their habitats, the research conducted regarding the conditions affecting fish and wildlife, and the work performed to correct the impact of industrial operations on fishery and wildlife. Several examples of the kinds of occupations which exist in this subsector include fisheries biologist, fish habitat manager, and bird and game management coordinator.

7. Parks and outdoor recreation

Subsector #7 involves the conservation and preservation of parklands. Activities in this subsector relate to the administration and operation of parks and outdoor recreational facilities. They include the supply of goods or services for the protection of parks, the development of interpretation programs, and the research conducted for the purpose of understanding the biodiversity in parklands. Several examples of the kinds of occupations which exist in this subsector include park superintendent, manager of environmental stewardship, and environmental assessment officer.

8. Forestry

Subsector #8 involves the supply goods or services which contribute to the conservation and preservation of forest resources (trees, soil, water and living organisms) on land where commercial logging is permitted. Activities in this subsector include the monitoring of the impact of logging on forestland, the implementation of sustainable forest management strategies, and the research conducted for the purpose of understanding the conditions affecting forest resources. Several examples of the kinds of occupations which exist in this subsector include forest technician, forest ecology coordinator, and vegetation management specialist.

9. Agriculture

Subsector #9 involves the improvement of conventional agricultural techniques so as to mitigate the impact of farming on the environment. Activities in this subsector include the development of equipment, supplies and farming methods which help bring agriculture in line with the goals of sustainable development. Several examples of the kinds of occupations which exist in this subsector include soil conservationist, plant and insect culturist, and reclamation consultant.

10. Mining and energy

Subsector #10 involves the supply of goods or services that mitigate the impacts of mining operations and energy production on the environment. Activities in this subsector include the implementation of the principles of sustainable development in the mining and energy industries. Several examples of the kinds of occupations which exist in this subsector include mines rehabilitation inspector, environmental resources coordinator, and environmental engineer.

11. Integrated natural resources management

Subsector #11 involves a combination of all of the activities performed in subsectors 6 through 10. Activities in this subsector include efforts to make informed decisions regarding development, balance human needs and pressures with the preservation of natural resources, coordinate conservation efforts, and manage large areas of land and their natural resources. Several examples of the kinds of occupations which exist in this subsector include environmental policy officer, manager of non-renewable resources, and regional environmental coordinator.

Qualifications for Sector B

In order to work in subsectors 6 through 11, you will require knowledge of the natural sciences (especially biology and ecology) combined with knowledge of project management, environmental and professional ethics, and consultative processes. Most individuals working in these subsectors have university degrees or technical diplomas related to the natural or applied sciences. Other important areas of general knowledge required in Sector B (for both individuals with university degrees and individuals with technical diplomas) relate to:

- regulations, legislation and policies affecting natural resources
- environmental impact assessments
- management of or participation in interdisciplinary teams

- scientific methods
- zoology
- agriculture
- first aid, search and rescue
- equipment set up and field data collection
- occupational health and safety
- map reading and navigation.

The generic skills which are most important for individuals working in Sector B include the aptitudes or abilities for:

- communications
- professional integrity
- organizational skills
- pragmatism
- critical thinking
- dependability
- follow-through
- integrative skills
- energy and enthusiasm
- team work.

Sector C: Environmental education, communications and research. This sector involves ensuring that efforts directed at maintaining and improving the quality of the environment are sufficient, efficient and promoted.

12. Environmental education

Subsector #12 involves the development and delivery of environmental education programs of all types and for all levels. Several examples of the kinds of occupations which exist in this subsector include fisheries and aquaculture instructor, environmental engineering technology program head, and environmental training coordinator.

13. Environmental communications

Subsector #13 involves the preparation of communications materials which are used to inform the public on environmental issues and responsibilities. Several examples of the kinds of occupations which exist in this subsector include environmental writer, public affairs director, and communications consultant.

14. Environmental research

Subsector #14 involves the development of technology that protects and enhances the environment. Several examples of the kinds of occupations which exist in this subsector include contamination control researcher, research technologist, and lead scientist.

15. Integrated management in environmental education, communications and research

Subsector #15 involves a combination of all of the activities performed in subsectors 12 through 14. Some examples of the kinds of occupations which exist in this subsector include program manager, director of corporate communications, and executive coordinator.

Qualifications for Sector C

In order to work in one of the sector C subsectors, you will require knowledge of the natural sciences combined with knowledge related to project management, environmental and professional ethics and consultative processes. The five most important areas of general knowledge required in Sector C are:

- environmental science
- scientific methods
- environmental impact assessment
- ecology
- analytical measuring and monitoring instruments

The generic skills which are most important for individuals working in Sector C are the same as those listed for Sector B.

As you can see, environmental employment is a complex mixture of academic disciplines, occupations, and media (air, water, land, etc.). When you consider the complex nature of the environment itself, though, why should it be otherwise?

For more information on the skills and knowledge needed by individuals working in the three sectors of environmental employment, please contact CCHREI at (403) 233-0748. CCHREI is an industry-led, not-for-profit corporation with a mission "to ensure an adequate supply of people with the demonstrated skills and knowledge required to meet the environmental human resources needs of the public and private sectors."

CCHREI is currently working toward the development of a certification process for individuals with environmental employment and an accreditation process for the environmental courses and programs offered by educational/training institutions throughout Canada.

Organizing Principles of Environmental Education/ Sustainable Societies[49]

Human survival depends on complex natural and human-built systems. When learners investigate the water cycle, a food web, or photosynthesis, they are studying a natural system. When learners investigate politics, economics, a dump site or the evolution of societies, they are studying human-built systems. These investigations help them identity the complexity of systems and the linkages among them. Learners must reconcile their present definitions with expanding information and changing societal beliefs. For example, without information from satellites, people would not be able to perceive connections between sunburn, the ozone hole, global consumerism, and home refrigerators and air-conditioners.

System connections are essential yet fragile. Stable ecological systems contribute to the long term stability of human, social, and economic systems. Learner understandings should lead toward actions that support attitudes and behaviours that work in concert with natural systems.

Environmental Education simultaneously examines the complexity and interconnectedness of systems while exploring the inherent sensory and cultural limitations of human understandings. Cultural attitudes toward the environment are affected by custom and tradition, folk lore and myth, economic considerations, religion, language, literature, art, science and technology. Developing cultural insights will help learners understand relationships between human rights, justice, race and gender equity, and global, social, and environmental concerns.

Example Concept

1) The concept of an ecosystem, or a social system, is derived from the collective interactions of individual parts. Exploration of complex systems requires holistic investigation, not isolated study of the individual parts.
2) Individual components serve unique functions in all complex systems. The loss or degrading of any single component may cause an overall decline in the viability, health, or durability of the system.
3) Biological organisms on Earth convert, utilize, store, and transfer energy as nutrients in a process commonly known as food chains and webs.

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[49] This material has been adapted from a draft framework for a developing Environmental Education/Sustainable Societies curriculum for the Province of British Columbia.

4) The planet's resources are finite; the net global balance of energy and matter is neither increased nor destroyed. Human cultures are inherently dependent on materials and energy supplied by the natural environment and global ecosystem.

5) Full cost accounting of human 'development' must include assessments of the impacts on human and ecosystem health, agricultural productivity, poverty, and biodiversity, among others.

6) In large and complex systems, it can be difficult to distinguish between a healthy ebb and flow and radical alterations to 'normal' processes (e.g., global warming).

7) Different human cultures observe natural systems through different philosophical, technological and social points of view. Accordingly, understanding complex systems requires examining cultural contexts.

Responsible action is integral to and a consequence of Environmental Education.

To participate in responsible action, learners must move beyond awareness of environmental concepts and issues. They need to practise and experience deciding what constitutes responsible actions that support their beliefs about and for the environment.

Some considerations about responsible action in Environmental Education:

1) There are consequences and responsibilities for any action and inaction.

2) There are a variety of actions that can be taken in any given situation. Some actions will be defined as responsible; some may be determined as irresponsible or inappropriate.

3) Any given action is preceded by motives or belief systems that influence the decision-making process.

4) There are personal limitations, physical or cultural, that influence action.

5) Responsible action requires distinguishing between needs (essentials) and desires (nonessentials).

6) Responsible action requires an understanding of the law, civic responsibility, distribution and influence of power.

7) Responsible action requires reflection about previous actions.

Learners develop an understanding of the environmental consequences of human decisions and actions. Environmental Education provides opportunities for learners to explore the effects of decisions and actions made at personal, community, societal, and global level. To become educated citizens, learners must examine the impacts of past and present cultures on their respective environments. Developing positive approaches to long-range environmental concerns is essential for maintaining the hope and optimism necessary for making environmentally responsible decisions and actions.

Sectoral Partnerships Initiatives - Sector Councils[50]

The key objectives of sectoral councils are to:

- promote employment opportunities via a highly skilled workforce
- facilitate and develop social/economic alliances between business and labour
- develop and implement national occupational skills, training standards, skills upgrading and certification/accreditation programs and prior learning assessment recognition (PLAR)
- provide labour market projections and information on trends and careers for governments, educators, parents, youth, and industry planners
- facilitate better dialogue between business and education/training system to foster a lifelong learning culture
- address the labour market entry problems and school-to-work transition difficulties encountered by youth, women, visible minorities, Aboriginal people, and people with disabilities
- meet industry's requirements for qualified new entrants into the labour force

The councils will achieve these objectives by enabling stakeholders — private firms; technical, professional and industry associations; employee groups; post-secondary education institutions; government departments; government-sponsored agencies; and non-government organizations — to work together to address the critical human resource issues threatening to constrain Canada's industries' future domestic and international growth of Canada's industries.

Each Sector's critical human resource issues have been identified through Sector Studies sponsored by Human Resouces Development Canada's Labour Market Outlook and Sectoral Analysis Branch. Many are still available through HRDC, and others are available from the Councils themselves.

Some of the issues identified in these studies include:

- a need for basic literacy/numeracy skills upgrading among workers already in workforce
- a need for better management skills, particularly among small, high-growth companies
- shortages of certain technical specialists, and troubleshooters with skills diversity
- constant regulatory change — and the need for companies to be adaptive

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[50] Adapted from Human Resource Development Canada resource materials.

289

- constant technological change — and the need for employees with skills to match
- communications between employers and educators often not having the needed result
- in general, declining enrolments in technical programs and youth's lack of understanding of industry
- aging workforce, declining youth population, increasing diversity of cultures and numbers of women in labour force.

For further information, contact HRDC (819) 994-3713.

List Of Operating Sector Councils

1. Canadian Aviation Maintenance Council
   Bill Weston - Executive Director
   290-955 Green Valley Cres.
   Ottawa, Ontario K2C 3V4
   Tel: (613) 727-8272
   Fax: (613) 727-7018

2. Canadian Automotive Repair and Service Council (CARS)/ Knowledge Network
   Don Bell - President, Council
   6 - 9120 Leslie Street
   Richmond Hill, Ontario K1R 7X6
   Tel: (905) 709-1010
   Fax: (905) 709-1013

3. Canadian Steel Trade & Employment
   George Nakitsas - Executive Director
   234 Eglinton Ave.East,5th Floor
   Toronto, Ontario M4P 1K7
   Tel: (416) 480-1797
   Fax: (416) 480-2986

4. Electric/Electronic Sectoral Skills
   Gregg Murtagh-Executive Director
   171 Nepean St. Suite 401
   Ottawa, Ontario K2P OB4
   Tel: (613) 567-3036
   Fax: (613) 567-31 95

5. Forum for International Trade Training (FITT)
   Dieter Hollweck- President
   155 Queen Street, Suite 601
   Ottawa, Ontario K1P 6L1
   Tel: (613) 230-3553
   Fax: (613) 230-6808

6. Canadian Professional Logistics Institute
   Victor Deyglio- President
   33 Yonge Street, Suite 710
   Toronto, Ontario M5E 1G4
   Tel: (416) 363-3005
   Fax: (416) 363-5598

7. Canadian Trucking Human Resources Council
   Sam Barone - Executive Director
   P.O. Box 1408, Station B
   Ottawa, Ontario K1P 5R4
   Tel: (613) 237-1780
   Fax: (613) 237-1844

8. Software Human Resource Council
   Paul Swinwood - President
   155 Queen Street, Suite 608
   Ottawa, Ontario K1P 6L1
   Tel: (613) 237-8551
   Fax: (613) 230-3490

9. Canadian Council for Human Resources in the Environment Industry
   Grant Trump - Executive Director
   700 - 4th Avenue S.W., Suite 700
   Calgary, Alberta T2P 3J4
   Tel: (403) 233-0748
   Fax: (403) 269-9544

10. Canadian Tourism Human Resource Council
    Wendy Swedlove - President
    170 Laurier Avenue West,
    Suite 600
    Ottawa, Ontario K1P 5V5
    Tel: (613) 231-6949
    Fax: (613) 231-6853

11. Textiles Human Resources Council
    John Saliba - Executive Director
    66 Slater, Suite 1720
    Ottawa, Ontario K1P 5H1
    Tel: (613) 230-7217
    Fax: (613) 230-1270

12. Horticultural Human Resources Council
Shirley Archambault - A/Executive Director
310-1101 Prince of Wales Drive
Ottawa, Ontario K2C 3W7
Tel: (613) 224-7852
Fax: (613) 224-7108

13. Woman in Trades and Technology WITT National Network
Ingrid Bron - Sector Council Administrator
Box 25
Kingston, Ontario K7L 4V6
Tel: (613) 546-8558
Fax: (613) 541-0734

14. Cultural Human Resources Council
Charles McGee - A/Executive Director
189 Laurier Avenue East,
Ottawa, Ontario K1N 6P1
Tel: (613) 565-7966
Fax: (613) 565-7022

15. Canadian Electronic & Appliance Service Industry
Fred Chorley - Executive Director
10 Wynford Heights Crescent,
Suite 150
Don Mills, Ontario M3C 3K8
Tel: (416) 447-7469
Fax: (416) 447-4972

16. Canadian Council of Professional Fish Harvesters
Daniel P. Bernier - Executive Director
71 Bank Street, Suite 700
Ottawa, Ontario KIP 5N2
Tel: (613) 255-3474
Fax: (613) 231-4313

17. National Seafood Sector Council
Johanna Oehling - Project Director
255 Albert Street, Room 805
Ottawa, Ontario K1P 6A9
Tel: (613) 782-2391
Fax: (613) 782-2386

18. Aquaculture Human Resources Council
Sharon Ford - Executive Director
20th Floor, 45 O'Connor St.
Ottawa, Ontario K1P 1A4
Tel: (613) 788-6851
Fax: (613) 235-7012

19. Mining Industry Training and Adjustment Council
Geraid Pelletier - Executive Director
350 Albert Street, Suite 1900
Ottawa, Ontario K1R 4A6
Tel: (613) 230-1413
Fax: (613) 230-5801

Support To Sectoral Initiatives

1. Canadian Labour Force Development Board
Phil Paquette - Sectoral Coordinator
23-66 Slater Street
Ottawa, Ontario K1P 5H1
Tel: (613) 230-6264
Fax: (613) 230-7681

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Explore the Components and Career Opportunities of Forest Resource Technology

LEARNING OUTCOMES

Upon completion of this unit, learners will be able to demonstrate an understanding of the forest as a complex ecosystem; identify and describe factors affecting forest use decisions; describe the scientific and social factors involved in forest management and land use planning; demonstrate an understanding of instruments used to evaluate the forest resource and determine their personal suitability for the field.

Note: This unit take will five to seven days, depending on the resources used and the interests of the learners.

Specific Learning Objectives	Teaching/Assessment Strategies
• Demonstrate an understanding of the forest as a complex ecosystem.	• Combine a classroom presentation of relevant data with a field exploration of examples of forest ecology: topography, aspect, soils, vegetation, and climate. • Ask learners to research and give a presentation explaining the food chain, food web, and habitat requirements of a selected forest animal. Presentations could address questions such as, "How does this animal's food chain affect the forest?" "What is the impact of traditional forest practices on this animal's food chain?"
• Identify and describe factors affecting forest use decisions.	• Ask learners to create a web with the forest at the centre, which highlights and then details how the forests are used.
• Describe the variety of occupations that are available in the forest industry.	• Using the web, have learners consider the range of occupations related to forest use (e.g. forest ecology/biology; food harvesting; soil/water/drainage; climate; integrated resource management; legislation/land claims; mensuration/timber cruising/plotting; extraction; silviculture/site preparation/regeneration, etc.). • Put together a panel presentation that includes various career paths in forestry (e.g., crewperson, technician, professional forester) in several of these disciplines. Have learners prepare questions that focus on the working conditions, define the educational requirements and training options, pay, etc. to ask panel members. • Conduct a map and compass workshop in the field. Using the information gained, have learners draw a map project using computer graphic programs if available (two to three days).

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Specific Learning Objectives	Teaching/Assessment Strategies
• Demonstrate map and compass skills and forest measurement through field reconnaissance.	• Depending on the time of year, field studies may be taken to various forest-related activities. - Spring: tree planting, silvicultural surveying, tree nursery, site preparation (burning); - Summer: mechanical site preparation, chemical applications, cruising, harvesting, logging shows, fire fighting; - Winter: cruising, harvesting, juvenile spacing, planning, visit sawmills, pulpmills, value-added plants, etc.
	• Discuss available activities with forest licensees, private industry, the forest service, etc., and request a supervisor to foster student participation.
	• Organize logistics for field trips (vehicles, equipment, food, clothing, waivers, etc.). Have learners assist where possible.
• Analyze personal suitability for technical-level forestry activities.	• Have learners conduct a search for information (e.g., on-line, newspaper, library) on careers in the forest industry. Have them write an advertisement detailing educational and skill requirements for a particular job. Conduct a discussion relating to what was learned from the experience.
	• Encourage learners to use their journals to evaluate their participation in the preceeding activities.

RESOURCES

Books

- *The Natural Resources 11 and 12 Integrated Resource Package* (IRP) from British Columbia is an excellent curriculum resource for this unit. It describes potential learning activities in detail.

Videos and Films

- *Logging with Lucille.* VHS, 30 min. Directed by Mike and Jeanne Halleran for The Association of Professional Biologists of B.C. and the Association of B.C. Professional Foresters. Kaslo, B.C.: WestLand. 1992.

  Westland is a program on sustainable development and land use in BC. Program 9 discusses environmentally responsible logging in the Queen Charlotte Islands. It covers slope instability caused by clear cuts, particularly the Riley Creek slide on Graham Island. The public demand environmental protection as part of doing business in BC and not as some afterthought. To answer this demand, Husby Forest Products uses a large sky crane helicopter (Lucille) to lift trees straight into the air from sensitive areas. Grapple yarding is used in less sensitive areas. Also, Husby hired a fish habitat technician to clear the streams of debris after logging so fish habitat would be preserved. With a computerized system, Husby uses a detailed cost control system to track logs from stump all the way to log market. This cuts losses and makes environmental logging pay.

- *The Introduction to Forest Health.* VHS, 14 min. Victoria, BC: Province of British Columbia. Ministry of Forests. Silviculture Practices Branch, 1995. Produced by Living Images/ Dave Luetjen; director: Victoria Clements; executive producer: Patricia Humphreys.

  Looks at four examples of tree damage caused by Douglas fir bark beetle; western spruce budworm; root disease; and deer browsing. With each example, forest health professionals describe the action taken to prevent or reduce damage and loss.

- *The Forest & the People.* VHS, 1992 B.C. Forest Alliance.

  Principles of sustainable forestry describes the Devick ranch in the Chilcotin country of British Columbia where fourth generation ranchers raise cattle and harvest trees to make a living. Emphasis is on multiple resource use and states all sides need to compromise on forestry issues so people can earn a living and the environment can be sustained.

- *Ecology & New Forestry.* VHS, 26 min. Burnaby: Open Learning Agency. 1992.

  Defines new forestry as an ecologically based forest management system. Examines the ecological principles of forestry in general and the management practices specific to new forestry.

Work Experience Placements

PREPARATION

It may be useful for the instructor to develop a list of employers willing to participate in providing work experience placements for program participants. Learners would interview with those employers who have indicated conditional support.

It is also possible that the instructor may want participants to have the experience of practising their job-search techniques in this situation. In this case, the Develop Job-Search Techniques unit should be completed before contacting potential employers.

In either scenario, the Job-Search unit should be completed by the instructor during preparation time, and by the learner prior to the work placement period.

Note: To ensure clarity and understanding, it may be useful to combine these points in a contractual form for the employer and the learner to sign prior to commencement of the work experience.

Present a course description and a letter of introduction to the employer. Ensure that employers are aware that:

1. the work experience is to be conducted during the regular working hours of the job
2. she or he will be asked to evaluate the suitability of the learner in regards to work habits, skill level and development, safety consciousness, initiative, and potential for success in this field of work
3. the learner will be covered during any hours of work by Workers' Compensation, through the college
4. learners are there to learn hands-on skills; they will do their share of clean up, etc., but are to be treated as much like trainees as possible
5. there will be no financial remuneration required
6. work experience placement does not constitute a commitment to ongoing employment.

It is helpful to set up the work experience for four days a week, with the fifth day to be spent in the classroom. This enables any work placement-related issues to be addressed before they become real problems. It also provides time for technical retesting, occupational fitness, and ongoing assertiveness training, math and other workshops, using the real situations that are being encountered.

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Work Experience

LEARNING OUTCOME

Upon completion of this unit, learners will be able to evaluate their suitability for their chosen field of work.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Assess the importance of a hands-on work experience in industry.	• As a class, brainstorm reasons why work placements might be valuable. Discuss why a hands-on approach may be important to a learner and what can be gained from such an experience.
	• Read Workplace Preparation from Unit 11 of the *Bridges to Equity Program Manual.*
• Develop criteria for evaluation of participation in a work experience-placement.	• Have learners review the Work Placement Objectives and Evaluation Guidelines sections of the *Bridges to Equity Program Manual* and develop individual criteria for evaluating performance on work placement.
	• Distribute Handout 1: Work Experience Placements, and discuss how employers might be approached.
	• Ask learners to prepare a self-evaluation sheet for their performance on the job using the employability skills outlined on Handout #2. Highlight questions from sample in Handout #4.
	• Distribute and discuss Handout #3: Employer Work Experience Evaluation. Let learners know that participating employers will be receiving and returning these forms. Address any learner questions, reach agreement on the criteria, and discuss any additional suggestions learners might have. Coach employers to provide honest constructive feedback to learners.
• Secure a hands-on work experience in the industry of your choice.	• Consider developing a list of employers willing to provide hands-on training for a three to four week period, and provide this to learners.
	• Encourage learners to approach employers to secure a hands-on work experience. This can be done either from a list of cooperative employers developed by the instructor (maybe for past classes) or by means of a "cold call" (where learners decide on a place they would like to work, and contact the employer directly). Learners should clear these kinds of approaches with the instructor first, as there may be information gained by previous classes that might be helpful. Monitor learner progress.

Specific Learning Objectives	Teaching/Assessment Strategies
• Evaluate the work experience placement.	• Ask learners to complete journal entries each day, describing the duties they perform, successes and accomplishments, challenges they face, and solutions achieved. Ask them to describe what they learned from their experiences each day. See "Keeping a Journal" in Unit 11 of the *Bridges to Equity Program Manual*. Review material individually with learners. Work with learners to create a plan to address any difficulties encountered. • Have learners complete the Participant Work Experience Evaluation form (see Resources section) and discuss this and the employer's evaluation with the instructor. • Ask learners to make individual presentations to the class, using a variety of presentations skills and media to describe their work experience in terms of the workplace and work performed, and analyse their personal suitability for the occupation. See Unit 13, Workplacement Debriefing from the *Bridges to Equity Program Manual*.

RESOURCES

Books

- Booth, Susan, Elizabeth Bohnen, and Judy Klie. *Bridges to Equity—Program Manual and Participant's Workbook.* Toronto: City of Toronto, 1991. 100 Queen Street West, Toronto, Ontario M5H 2N2. Attention: Resource and Publication Centre. Ph: (416) 392-7410; Fax: (416) 392-1553.

  Filled with practical exercises to use with self-assessment, shop training, learning styles exploration, overcoming workplace barriers and career decision making.

- *Career and Personal Planning 8 to 12: A Resource for Schools.* Province of British Columbia, Ministry of Education, Skills and Training, 1996.

  Although focused on secondary school learners, the *Work Experience Handbook: Policy, Guidelines and Best Practices* and the *Work Experience Resource Guide*, as well as the instructional strategies and resources for Grades 10-12, provide useful information about the goals and varieties of work experience, process and guidelines criteria, learning outcomes, assessment and evaluation. It uses employability skills as the basis for participation.

- *Employability Skills Profile: What Are Employers Looking for?.* Ottawa, Ont.: The Conference Board of Canada, 1992. ISBN 0-88763-198-3. Report 81-92-E Also available electronically. Ph: (613) 526-3280; Fax: (613) 526-4857.

- *Making Work Experience Work: A Handbook Supporting Community Involvement.* Vancouver, BC: BC School Trustees Association, 1995. Ph: (604) 734-2721.

  Provides excellent criteria for learning outcomes as well as possible evaluation instruments. Good description of responsibilities for: learners, parents, educators, and site supervisors/sponsoring employers.

Internet sites

- A series of Internet sites with links to occupational research information: (Note: Internet sites change frequently. These sites were current as of publication, but it is important for learners to develop effective search skills on the net.)

  - http://hrdc-drhc.gc.ca/hrdc/corp/stratpol/jobs/english/index.html
  - http://www.etc.bc.ca/provdocs/careers/labour.html

  Conduct occupational research using the sites hot linked from this page.

  - http://www.etc.bc.ca/provdocs/careers/library.html
  - http://workinfonet.bc.ca/lmcidb/default.htm (very strong listing of LMI and career resource information from a very wide variety of sources)
  - http://workinfonet.ca/
  - http://careerpathsonline

Work Experience Placements

As part of the Orientation to Trades and Technology training program, you are required to have an on-the-job experience. These four weeks or so are set aside so you can test your occupational choice(s) in a realistic way. The work placement is an important learning experience for you, in which you can increase your knowledge and skills, develop new contacts, prove your worth to a potential employer, and get direct valuative feedback. It may also be a way of obtaining a job.

Your instructor will help you, but establishing the work placement is your responsibility. This will teach you important job-search skills that will last a lifetime. A contract will be drawn up between the employer, union representatives (if appropriate), your instructor, and you, outlining your learning needs (on-the-job training, information, etc.), the employer's expectations (days and hours of work, job description, regulations, etc.), and establishing the criteria on which you will be evaluated. It is important that you see the work placement as a learning experience. Your assertiveness in asking questions, requesting instruction in performing new tasks, taking responsibility for your safety, and actively seeking out learning experiences will help ensure a successful work placement. Your positive attitude, and demonstration of effective problem-solving skills along with constructive communication skills may net you a positive letter of recommendation, or even a short- or long-term job.

The work placement will also provide you with the opportunity to apply theory and classroom experience to the "real world" of work. It is during this time that you will realize what gaps exist between classroom learning and the reality of industrial work. You will identify these situations and share your learning and working experiences during the debriefing sessions scheduled for one day a week in the classroom.

A large part of this learning process will be discovering the requirements for entering your classroom trade and how to qualify. Working inside industry, you will have the advantage of finding out where the jobs are, who is hiring, and perhaps even the comparative standards of several different industries. A casual conversation with a supervisor over coffee break may tell you more than weeks of outside research as to job openings, qualifications, and chances of being hired.

The work placement is also a time to investigate union policies and get some feeling for the union/management relations. How powerful or co-operative is the union? Are women equally represented? What are the management's safety standards? What are the usual company benefits and services? Are there similar industries where women are working? What is the company's history? Is this a good work placement to recommend to future program trainees?

At the completion of the work experience, you will write a self-evaluation, indicating what new knowledge and skills the work placement provided, and an assessment of your own competency in selected areas.

During your work experience, your instructors will contact your work supervisor and you to assess your progress and to locate any areas of instruction or difficulties requiring special attention. We wish you the best of learning in your placement!

Employability Skills

Employability skills are the academic, personal management, and teamwork skills that employers look for in employees.[51]

Academic Skills

Communicate:

- speaking
- listening
- reading / comprehensive
- writing

Think:

- critical thinking
- problem solving
- decision making
- using technology effectively

Learn:

- lifelong learning
- willingness to learn

Teamwork Skills

Work with Others:

- group decision making
  - respectful
  - perform work safely and effectively
  - co-operative
  - team approach
  - leadership
  - understand/work with diverse cultures

Responsibility:

- set goals and priorities
- manage time
- manage money and resources
- accountability

Adaptability:

- meet performance standards
- positive attitude to change
- recognition/respect for diversity
- creativity

Personal Management Skills

Positive Attitudes and Behaviours:

- self-esteem/confidence
- honesty/integrity
- personal ethics
- positive attitude
- confidentiality
- regular attendance/punctuality
- trustworthiness
- initiative
- energy
- persistence to get the job done

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[51] The term "employability skills" was coined by the Conference Board of Canada, and has been expanded upon by the BC Ministry of Education, Skills and Training Career and Personal Planning curriculum. This has been adapted from both of those sources.

Handout 2

Employer Work Experience Evaluation

Name of participant ______________________________ Date ____________

Employer______________________________

1. Do you feel the work experience component of the course is worthwhile? Explain.

2. Was the length of the work placement sufficient to examine the learner's suitability for training and/or employment in this field? Why or why not?

3. Would you be interested in taking another learner next year?

4. If you were going to hire a trainee, would you consider hiring this individual? Please be specific if the answer is no.

5. Would you write a reference letter for this person?

6. Please rate the following items:

		excellent					very poor	
Interest in work		1	2	3	4	5	6	
Initiative		1	2	3	4	5	6	
Quality of work		1	2	3	4	5	6	
Communication skills		1	2	3	4	5	6	
Acceptance of criticism/suggestions		1	2	3	4	5	6	
Works well with others		1	2	3	4	5	6	
Mechanical ability		1	2	3	4	5	6	
Physical suitability		1	2	3	4	5	6	
Analytical qualities		1	2	3	4	5	6	
Attitude		1	2	3	4	5	6	
Flexible/Adaptable		1	2	3	4	5	6	
Team player		1	2	3	4	5	6	
Safety consciousness		1	2	3	4	5	6	
Reliable		1	2	3	4	5	6	
Punctuality		1	2	3	4	5	6	
Level of supervision required	(a little)	1	2	3	4	5	6	(a lot)

Please write any additional comments on the back of this sheet.

Participant Work Experience Evaluation -

Name ______________________________

Work Placement Employer__________________________Type of work ______________

1. Describe how you got your work placement.

2. Do you think it is more worthwhile to find your own placement or to have a list to choose from? Explain.

3. Did you feel mentally and physically prepared for your placement? Explain.

4. Was the placement long enough? Why?

5. Did you benefit from returning to class one day a week? Why or why not?

6. Please check the response that most closely reflects your opinion:

	Too Much	About Right	Too Little
a. Opportunity to use tools and equipment			
b. Supervision and help from employer			
c. Supervision and help from other workers			
d. Assistance from instructor			

7. Did the work placement provide what you expected? Yes_____ No_____ Please comment.

8. Did you gain anything from the work placement that you didn't expect? Yes_____ No_____ Please comment.

9. Did you feel accepted in this environment?

10. What was the biggest barrier you had to overcome?

11. What was the most important thing you learned from your work placement?

12. Would you want to be hired there? Explain.

13. Would you recommend this work placement to a learner in the future? Why? Why not?

14. Please rate your performance on the job according to the following items:

	Excellent			Needs Improvement
Listening Skills	1	2	3	4
Verbal Communication	1	2	3	4
Written Communication	1	2	3	4
Reading, Comprehension	1	2	3	4
Willingness to Learn	1	2	3	4
Self Esteem and Confidence	1	2	3	4
Ability to Set & Obtain Goals	1	2	3	4
Accountability for Actions	1	2	3	4
Personal Ethics — Honesty, etc.	1	2	3	4
Initiative	1	2	3	4
Ability to Think Critically	1	2	3	4
Use Technology Effectively	1	2	3	4
Acceptance of Change	1	2	3	4
Creativity	1	2	3	4
Productivity — Quality Product	1	2	3	4
Performs Tasks Safely	1	2	3	4
Respectful of Others' Diversity	1	2	3	4
Cooperative — Is a Team Player	1	2	3	4

Career Development

Career Options and Decision Making

UNITS

- Examine Labour Market Trends and the Impact of Technology on Opportunities in Trades, Technology and Operations
- Examine Training and Employment Options, and Requirements in Trades, Technology and Operations
- Demonstrate Career Decision Making and Follow-Up Activities
- Clarify Financial Aid Options

KEY IDEAS

- Economic forces and technological change are having a massive impact on the kinds of jobs that will be available in the next ten years.
- Computer literacy will provide a significant competitive edge in almost any field of endeavour.
- The distinction between trades and technology is diminishing.
- Observing other women involved in a variety of jobs makes the work seem more accessible.
- Personal research provides more information and first-hand knowledge, which allows a more realistic and practical approach to career path decisions.
- Career decision making is an analytical process with specific steps that can be used to develop a career action plan.
- There are many financial aid options available. The secret is knowing how to have access to them.

PURPOSE

Many issues need to be taken into account before deciding on a career path: interests and abilities; in what fields will jobs continue to be plentiful; where and in what timeframes training is offered; what impact the actual work environments have; and what financial options are available. This topic provides learners with an exploration of all of these areas, as well as assisting them in collating the information to determine a training and career path. The investigative work is done by learners in their chosen fields and then shared with the group. This ensures the personal integration of the information and gives the whole group access to the widest possible range of information on which to base their choices.

REQUIREMENTS

This topic requires a willingness to consider career options with an open mind, initiative to investigate a variety of employment sectors, and a willingness to develop abilities in making verbal presentations.

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Examine Labour Market Trends and the Impact of Technology on Opportunities in TTO

LEARNING OUTCOME

Upon completion of this unit, learners will be able to describe current labour market trends for a variety of jobs in trades and technology.

Specific Learning Objectives

- Analyse labour market trends, job availability, and wage levels in trades, technology, and operational work.

Teaching/Assessment Strategies

- Read "Labour Market Trends"; "Jobs in the New Economy"; "Labour Market Skills for a New Economy"; the "Summary of Key Themes" in *Making Career Sense of Labour Market Information;* and "What is Happening..." in *Radical Change in the World of Work.* In study groups, ask learners to come to agreement on the five most important factors affecting their ongoing participation in the labour force, and outline some general initiatives that individuals could undertake to address those challenges. Are there differing impacts for aboriginal people on reserves? What are the impacts of these issues on the local community?

- Ask learners to research and make a verbal report on current labour market trends and projections, using print and Internet resources such as *Making Career Sense of Labour Market Information,* Appendix F: "Summaries of Industry Sectoral Human Resource Studies; Career Paths"; *Job Futures; Canada Prospects; Occupational Outlook 1992-present*; The Job Guide; High-Tech Career Strategies for Women, pp.67-107; *Economic Review, 1992-present;* and Internet resources:
  - www.careerpathsonline.com
  - www.workinfonet.ca/

  Look up the term career paths on the Internet, and research a wide array of options. Use HRDC resources specific to your local area such as Occupational Summary, Occupational Profiles, Area Community Profiles, Industry Profiles and Labour Market Review. What are the growth areas of the economy? What occupations are in high demand? What has been the impact of globalization and multinational industries? In what way has the job growth changed in the past 10 years? How have the skill requirements for jobs changed? Working conditions?

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Specific Learning Objectives	Teaching/Assessment Strategies
• Examine the impact of technology on trades and technology jobs.	• Ask learners to read Handout # 1: The Impact of Technology. Ask them if any of the information contained in the article changes the way they perceive old and new technology. Brainstorm examples in each of the categories, and discuss their benefits, drawbacks, and impact on our lives. • Show the videos, *Now the Chips Are Down*, or *Shift Change*. Discuss the impact of the issues addressed on labour market trends. Ask learners for examples from the college, the community, and local businesses. • As a class project, make a video that describes the impact of technology on local businesses and services.
• Demonstrate an understanding of the social impact of technology.	• Read "Women changing technology changing women" (Elaine Bernard from *Surviving and Thriving–Women in Trades and Technology and Employment Equity*, 1989, See Develop Technological Literacy unit). In small groups, make an outline of the important points she is making relating to the development of changing technology, women's historical and potential role, and well as the role of workers and the community. • In small groups, have learners compare and contrast the following paragraphs; describe several situations where they would be applied, what would take place, and the occupations of the people who would need to be involved; and prepare a presentation for the class outlining potential positive and negative outcomes: "Choices made today, about the nature of our technical means, legislate the future, sometimes irreversibly....To counter this self-destructive movement...requires intelligent human action in the control of adaptive systems. The solution to this problem is the control of our technical systems for the human social purpose. This will require an understanding of the behaviour of these systems and the relation of these systems to human beings, their social purpose, and the environment." (Snyder & Hales, 1981, p. 4) "Technology is the means and processes through which we as a society produce the substance of or existence." (Elaine Bernard, *Surviving and Thriving*, 1989, p. 226)

RESOURCES

Books

- Alberta Advanced Education and Career Development. *Radical Change in the World of Work - Workbook*. Edmonton. 1996. Learning Resources Distribution Centre. Ph: (403) 427-5775, Fax: (403) 427-9750. ISBN 0-7732-1722-3. $8.00/copy outside Alberta.
- Alfred, Diane and Elaine O'Reilly. *Making Career Sense of Labour Market Information*. Ottawa: Canadian Guidance and Counselling Foundation (CGCF). 1995 Ph: (613) 729-6164.

  Market trends and accessible information, as well as excellent references to additional specific easily obtainable resources that update regularly.

  Note: CGCF has fostered the development of over 30 innovative programs, resources and professional development courses that focus on career development and career counselling for youth, most of which can be used with an adult audience with little adjustment. Some projects focus specifically career development and developing employability skills for aboriginal youth, or women, those with disabilities, or other "at-risk" individuals. Call CGCF for more detailed information.
- Beck, Nuala. *Excelerate: Growing in the New Economy*, and *Shifting Gears - Thriving in the New Economy*. Toronto: HarperCollins. 1992

  Ms. Beck writes about complex structural and economic issues, about which industries are growing and why, in fast-paced interesting and accessible language. Good charts and visuals. Also available in paperback. Contains suggestions about keeping current, gaining access, and managing in this world of constant change.
- Bridges, William. *Job Shift: How to Prosper in a Workplace Without Jobs*. Reading, Mass. & Don Mills, Ontario: Addison-Wesley Publishing Co. 1994

  A well written description of the current changes occurring in the labour market.
- *Career Directions, Not Sure of University? Thinking of Something Else? Check out Career Directions!* Ottawa: Human Resources Development Canada, 1994. Available from Enquiries Centre, Fax: (819) 953-7260. Soon to be available on the Internet at http://www.globalx.net/ocd

  An A-Z directory of 160 different jobs in the Canadian labour market.
- Goldberg, Joan Rachel. *High-Tech Career Strategies for Women*. New York: Collier Books, 1984. See "Recognize, Adapt and Influence Workplace Culture" for review.)
- *"Jobstories: I Like the Work, I Like the Money"*. Vancouver: Learning Resources Society. (604) 524-0788. Reprinted 1991, funded by the Gender Equity Program of the BC Ministry of Education and Ministry Responsible for Multiculturism and Human Rights.

  Interviews with 56 British Columbian women in a variety of growth occupations. Good first person descriptions of duties and skills required for occupations, as well as projections for growth in jobs.
- Laurence, Karen Weiner and Elaine Cooper. *Take Two: A woman's guide to technical jobs in the film and television industry*. Toronto: Toronto Women In Film & Television. 1993. ISBN: 0-9695351-4-7
- Province of British Columbia. *The Job Guide*. Victoria. 1995.

  Profiles hundreds of jobs in a variety of sectors, including growth potential, educational requirements, and personal strengths needed.
- Province of British Columbia. *Work Futures: British Columbia Occupational Outlook*. Ministry of Education, Skills and Training. Victoria, 1996. Available from the Open Learning Agency Ph: 1-800-663-1653, order number #MN1249

  A book documenting current labour market conditions and trends for many occupations found in the Canadian National Occupational Classification. Also available on the Internet.
- Reddekop, Dave and Barrie Day. *Pathways to Careers*. (originally the Pandora Project: Edmonton:

RESOURCES CONT.

Concordia College). Distributed by Weigle Educational Publishers. Ph:1-800-668-0766

Interactive videodiscs exploring many levels of careers in telecommunications, environment, computing, health and materials processing..

- Rifkin, Alan. *The End of Work.* Also CBC TV The National Magazine from September 6, 1996.

Internet

- A series of Internet sites with links to occupational research information: (Note: Internet sites change frequently. These sites were current as of publication, but its important for learners to develop effective search skills on the net.)
  - http://hrdc-drhc.gc.ca/hrdc/corp/stratpol/jobs/english/index.html
  - http://www.etc.bc.ca/provdocs/careers/labour.html

  Conduct occupational research using the sites hot linked from this page.
  - http://www.etc.bc.ca/provdocs/careers/library.html
  - http://workinfonet.bc.ca/lmcidb/default.htm

  Very strong listing of LMI and career resource information from a very wide variety of sources
  - http://www.workinfonet.ca/
  - http://careerpathsonline.com
  - http://www.globalx.net/ocd

  Conduct your own Internet searches related to Labour Market Information, Labour Market Statistics, etc.

Videos and Films

- *Learn a Skill.* VHS. Victoria: B.C. Learning Connection Inc. (BCLC), Learning Resources Branch Ph: (250) 387-5331 Order number IGLL08

  A video sharing several viewpoints on the need for a highly-skilled labour force in Canada.

- *Now The Chips Are Down.* BBC, 50 minutes, 16 mm/video, 1978. Available through AMEC and other provincial media resource libraries.

  A classic and still useful film documenting the development and some effects of technology. Looks at libraries, and the changes in production at the Los Angeles Times. Still one of the few and best resources on this subject.

- *Shift Change.* NFB, 1986. Ph: 1-800 267-7710

  Introduction of the microchip. Looks at the steel industry in Canada.

- *Aircraft Maintenance Engineer.* VHS, 10 min. Ottawa: Canadian Aviation Maintenance Council, 955 Green Valley Crescent, Suite 330, Ottawa, Ontario K2C 3V4. Ph: (613) 727-8272 Fax: (613) 727-7018.

  Designed to encourage high school students, especially young women, to consider aircraft maintenance as a career. Two women and several men are seen in the video who share their experiences as engineer and engineering student. Up-to-date images of the industry, training requirements and working conditions are presented along with an accompanying facilitator's guide.

Periodicals

- *Canada Prospects - Canada's Guide to Career Planning.* A Joint Federal Provincial newsprint initiative. Also on the Internet at http://www.globalx.net/ocd

  Well written, humourous, factual and filled with interesting career development information, exercises, challenges and lessons.

- *The Canadian Occupational Projection System.* Human Resources Development Canada, Labour Market Analysis and Macroeconomic Studies, Strategic Policy, 140 Promenade du Portage, Phase IV, 4th Floor, Hull, Quebec K1A 0J9. Ph: (819) 994-3738; Fax: (819) 953-8584 or your regional HRDC Economic Services office.

- Career Paths. Yes *Canada.* Newsprint and Internet format. 5050 Kingsway, 6th Floor, Burnaby, B.C. V5H 4C3. Ph: (604) 435-1937, Fax: (604) 435-5548. http://careerpathsonline.com

An extremely well done publication/web site filled with information, activities, questionnaires, quizzes, biographies, checklists, etc. COPS provides labour market information and projections to help industry, labour, educators and students adjust to a changing economy. Some of the many COPS products on the labour force include historical, current and projected information on:

- population and labour force by sex;
- employment by occupation (500 occupations);
- employment by industry (67 sectors);
- immigration by occupation;
- labour force by entrants and leavers;
- trainees and apprentices by occupation; and
- post-secondary and trade school graduates by field study and occupation

- *Perspectives on Labour and Income:* Statistics Canada. Can be purchased at Statistics Canada agents and other community bookstores, through the Statistics Canada office or by mail from: Publication Sales, Statistics Canada, Ottawa, Ontario K1A 0T6. Ph: (613) 951-7277; Fax: (613) 951-1584. Toll-free: 1-800-267-6677.

  The journal is published four times a year and provides information on:

  - the education and training of the labour force in Canada;
  - the distribution of income and trends in wages in the country;
  - update on research underway in the labour and income field; and
  - new income and labour market data.

- *The Labour Market: Mid-year review,* Statistics Canada (see above)

  An annual supplement with highlights and analysis of trends in labour market statistics in the previous six months. Each issue has a "What's New?" section on latest and upcoming information related to the Canadian labour market. There is a "Key Labour and Income Facts" section with latest annual figures and the most recent unpublished updates. Twelve sources of information for the table are listed with contact names and telephone numbers. A 10 year data set is also available on paper or diskette. Ask your library to order this.

- *Where the Jobs Are: Career Survival for Canadian in the New Global Economy.* Irwin Publishing 1800 Steeles Avenue West, Concord, Ontario L4K 2P3 Ph: (905) 660-0611 Fax: (905) 660-0676. ISBN 921912-692

  A 400 page reference book with a Canadian perspective.

- Weinstein, Robert V. *Jobs for the 21st Century.* Toronto: Collier Macmillan Canada, 1983.

  A very specific book documenting technological change in our business world and society in general. It outlines the changes taking place in white- and blue-collar work, suggests changes in the learning environments, and describes self-marketing and job-finding tips and tactics in this new climate.

- *Occupational Summary; Occupational Profiles; Area Community Profiles; Industry Profiles;* Labour Market Review; etc are available through your local CEC or Human Resource Development Centre.

- *Economic Review.* Vancouver: Economic Services, B.C./Yukon Region, Employment and Immigration Canada, 1055 W. Georgia, Vancouver, B.C. Ph: (604) 666-0134.

- *The Occupational Quarterly.* Toronto, Ontario. Ontario Region HRDC.

- *High Demand Occupations.* Winnipeg, Manitoba. Manitoba Region HRDC/jointly with Manitoba Education and Training.

  Analysis of the implications of many issues on the industries of the province, and what effect that will have on employment, wages, and development. Uses specific examples. Very interesting and informative; a good resource for exploring the potential job market.

- *Occupational Outlook,* A COPS Publication. Vancouver, B.C.: Economic Services. Ph: (604) 666-8365

  Keeps you up-to-date with the latest information on labour market trends. Free and easily available.

The Impact of Technology

The first thing to look at when discussing technology is: What do we mean by the term "technology"? Everyone talks about it, but few bother to define it. If you look up the word "technology" in the dictionary, it will be defined as "applied science" or "the practical arts in total." While these are correct definitions, they don't really help us understand specifically what technology is or how people interact with it. A better definition of technology is "the means and processes through which we, as a society, produce the substance of our existence."

Specifically, technology consists of five items:

- tools
- energy forms
- materials
- techniques
- organization of work

Tools

When people talk about technology today, they are usually referring to computers, lasers, and robots—the new tools of our age. What makes many of the new microelectronic tools of today different than the pneumatic or electromechanical power tools of yesterday is that with the assistance of microelectronics, intelligence can be programmed into the functions of these machines.

Energy Forms

These are the driving powers behind technology. Energy forms have varied through history, from hand-powered tools to water power (water wheels), to steam, various internal combustion fuels, electricity, pneumatics, and to today's electronics. One of the major uses of microelectronic controllers is to increase the energy efficiency of traditional energy forms. In addition, today there are many projects seeking to harness alternative forms of energy such as solar and tidal power.

Materials

A major technological revolution in the 20th century has been the replacement of natural materials such as wood and stone with human-made materials such as plastics and concrete. Changes in materials can have a profound impact on work in trades and technology. Think, for example, of the changes that are currently going on in plumbing, with a change-over from metal piping to plastic. Plastic is significantly lighter (and therefore requires few workers to carry, hold it in place, etc.) and requires far less time, skill, and effort to connect.

Techniques

A good example of how significant new methods of doing things can be is from the construction trades, where new equipment such as hammerhead cranes have made new methods of construction possible (e.g., the flying form). The standard practice in high-rise construction has been to build a wooden form (or mould), which is dismantled when the concrete hardens and a new one made for the next storey. The flying form does not need to be constructed, dismantled, and reconstructed. Instead, the form is lifted to the next floor and each subsequent form is used. This has significantly changed the number of carpenters required on a large building construction site.

Organization of Work

This involves the way materials, energy forms, tools, and techniques are organized in a productive way in the workplace. Again, using the example of the construction trade, more and more materials are being "prefabricated" before they arrive on site. This means fewer jobs are available on the construction site.

Some of the advantages of new technology are that it can:

- eliminate dangerous jobs
- eliminate tedious, repetitious work
- create new products
- create new jobs
- allow limitless access to information
- provide assistance for the disabled
- be energy efficient
- allow conservation of energy
- allow conservation of materials
- reduce costs.

Some of the problems associated with new technology are that it can:

- create unemployment
- increase shift and part-time work
- cause de-skilling
- lessen job satisfaction
- invade privacy
- create health and safety threats from VDTs, new chemicals, and automated systems
- create work at home, and piece-rate work
- cause people to relate only to machines
- cause alienation
- eliminate jurisdiction (transfer of craft jobs to clerical with resulting loss in pay).

Examine Training and Employment Options, and Requirements in TTO

LEARNING OUTCOME

Upon completion of this unit, learners should be able to describe the training and employment requirements of a variety of trades and technical jobs.

Note: This is an ongoing unit, which must be explored over a period of time in order to facilitate learning and integrate past experience with current and future knowledge and practice.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Compare trades and technologies	• Brainstorm two lists: one for trades, the other technologies. Discuss the differences and similarities between them; how and why it is becoming harder to distinguish between them; what the impact of class distinctions has been on jobs, titles, training, etc.; what impact has this had on the challenges for women in the field. • Have learners look at job "families" (the varieties of jobs available under each different training area). Use local college and Institute of Technology catalogues as resources, as well as the *Sector Council Human Resource Studies* series of publications. The charts in *Jobs for the 21st Century*, pp. 61, 74-79, and 81; on pp.78/79 of *Making Career Sense...*; the "*National Occupational Code (NOC)*" and *Career Information Handbook* are excellent resources, as are *Job Futures* and *Self-Directed Career Planning Guide*.
• Research: - apprenticeship and technical training options - technician/technologist certification - licensing - professional associations.	• Ask members of the class to each choose a different occupational area to research, and have them create a matrix that includes educational requirements and training options for the various skill levels, salary ranges, and time required to achieve each level. • Have learners develop a set of questions to expand their knowledge about apprenticeship and technological occupations, and using suggested resources and the Internet, work in pairs to answer those questions. Invite an Apprenticeship/ Training Counsellor and someone from a technical professional association to make a presentation to the group. Provide current lists of apprenticeable trades in your province. Follow up on any unanswered questions. • Tour shops/labs, and ask those in charge to make short presentations on employment opportunities in their field.
• Research accreditation of foreign credentials and prior learning assessment opportunities.	• Ask learners affected by foreign credentials issues to investigate what their province has done to assist people in these processes, and the steps they must take to receive credit for the knowledge and experience they bring.

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Specific Learning Objectives	Teaching/Assessment Strategies
Explore personal feelings and attitudes about trades and technical work.	Show the films, *Attention: Women at Work* and *What About You?, Learn a Skill*, and/or *Wise Choices*. Conduct a class discussion from the material covered thus far in the unit: which types of work can the learners imagine themselves doing? What kinds of skills and attitudes would help them be successful? Do they see any differences or similarities between themselves and the women in the film?
Assess working conditions in a variety of technical and industrial settings.	Take learners on tours of a variety of industrial settings. Upon returning, have learners work in groups to prepare presentations answering questions such as: what were their expectations? what on the tour was similar or different from their expectations? what did they like or dislike about the work settings? could they imagine themselves working in those settings? what they would like to see changed?
Research the training and employment requirements and options for trades or technical occupations.	Role models are a significant factor in making career decisions. Ask learners to prepare a list of questions they might want to ask women in the field. Present the list (see Handout: Sample Questions and Report Requirements) to potential panel members. (Ask around for women who might be willing to come and participate—perhaps a member from a local WITT group, or previous graduates of college programs; give them at least a week of preparation time.) Panel members could make presentations based on the prepared questions (10-12 minutes), and learners could follow up with questions and further discussion.
	Compile and deliver a report on three trades and technology occupations. The handout, Occupational Research, provides suggestions of what might be necessary to learn through an occupational research project. See also "How do I find out more about the occupations that interest me?" in *The Career Planner*, and the web site http://careerpathsonline.com, as well as some of the Internet sites listed in Examine Labour Market Trends. Suggest that learners research at least one trade and one technology of their choice, and one other. Written reports will be presented orally in class so that all learners benefit from the work of the others. Many of the resources mentioned in this and the previous unit would be valuable in this research, including the Internet.
	Review material in The *Back-to-School Survival Guide for Women* and *The Education and Training Planner* for information on education and training options and resources.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Evaluate technical training setting.	• Have learners use the following criteria to evaluate public and private training opportunities in their field: - Does it provide recognized certification? - In what way does industry participate and recognize the program? - Are courses transferable? To where? - What are the placement statistics and companies? Employer references? - How current is the technical equipment? - What are the qualifications of the instructors? How current are those qualifications? - What are the class sizes? Student/teacher ratio? Equipment/student ratio? - Is this a work placement? Work placement assistance? - Is this certified as a public or private training institution? - Is there prior learning assessment recognition? - What is the length of the course? Hours? Theory/practical breakdown? - What is the cost comparison with other institutions? - Is it eligible for student loans?

RESOURCES

Books

- Alberta Advanced Education and Career Development. *The Education and Training Planner.* ISBN 0-7732-0608-6, and *The Career Planner* ISBN 0-7732-0606-X. Both revised 1996. Edmonton: Learning Resources Distribution Centre. Ph: (403) 427-5775; Fax: (403) 427-9750. $4.00/copy outside Alberta.

  These booklets looks broadly at choosing an occupation, education, and training options (Alberta focused), budgeting and financial aid, support systems and decision making.

- Alberta Advanced Education and Career Development. *Careers in the Trades: A Presenter's Guide.* ISBN: 0-7732-0629-9. Revised 1996.

  A looseleaf binder for those who will talk about apprenticeship options to others. Defines terms, describes processes and timeframes, roles and responsibilities, costs, etc. Includes two-three page occupational profiles of many trades that document personal and academic qualifications, duties, potential for employment and advancement, salary.

- Province of British Columbia. *The Adult Back-to-School Book — Making a New Beginning.* Victoria, 1994.

  Filled with questions, answers, and tips, rooted in case studies. Covers financial issues, decision making and action planning, fears and support systems, childcare, effective studying and test anxiety.

- Alfred, Diane and Elaine O'Reilly. *Making Career Sense of Labour Market Information.* Ottawa: Canadian Guidance and Counselling Foundation. 1995. Ph: (613) 729-6164. Available in BC from the Open Learning Agency order #MN1225

  Wide range of labour market information. Chapter 6 has an overview of Apprenticeship and other training options. Chapter 5 and the Appendix contain information about Canada's industrial sector requirements. Chapter 4 looks at employability skills.

- British Columbia Ministry of Education, Skills and Training. *Secondary School Apprenticeship: Guidelines*, Procedures and Best Practices. Victoria: MoEST, Apprenticeship Branch, 1996.

  Part One is what we have all been looking for re: how apprenticeship works. The section on Equity is a solid background piece as well as good "how to" gain access and increase retention. The SSA Checklist covers many issues that those delivering exploratory courses might face. The Glossary in the Appendix is very useful, as is the list of Apprenticeable occupations, and the Activity list for overcoming barriers for equity groups.

- Ellis Chart, *Comparative Chart of Apprenticeship Training Programmes.* Human Resources Development Canada, Employment Services. Order from Occupational and Career Information Branch. Catalogue number MP43-21711990, HRDC, 140 Promenade du Portage, Place du Portage, Phase IV, Hull, Quebec KIA 0J9.

- Province of British Columbia. *Work Futures: British Columbia Occupational Outlook.* Ministry of Education, Skills and Training. Victoria, 1996. Available from the Open Learning Agency Ph: 1-800-663-1653, order number #MN1249

  A book and Internet information documenting current labour market conditions and trends for many occupations found in the Canadian Classification Dictionary of Occupations (CCDO). Check library.

- Occupational Trades Analyses series. HRDC. Fax: (819) 953-7260

  An excellent series of books describing, in detail, the knowledge and skill requirements of the trade or technology. Available at the local Canada Employment/Human Resource Centre.

RESOURCES CONT.

- Ontario Ministry of Citizenship. *ACCESS! Task Force on Access to Professions and Trades in Ontario.* Toronto: Publications Ontario, 5th Floor, 880 Bay St., M7A 1N8. 1989.

  Focuses on issues related to developing prior learning assessment, particularly for foreign-trained individuals. Includes federal language programs and a list of other provinces' programs.

- Ontario Ministry of Education and Training. *Apprenticeship: A New View of the Future—Counsellor's Handbook.* Toronto: Apprenticeship Branch. Ph: (416) 325-5605.

- *Ontario Computerized Directory.* In Ontario, call the Training Hotline: Ph: 1-800-387-5656.

  Bilingual program for information on skilled occupations and apprenticeship programs. Available at provincial Apprenticeship and Client Services offices, some public libraries, community counselling groups and community colleges, community industrial training committees, Contact North and through guidance counsellors in secondary schools.

- Randall, Nora D. *Back-to-School Survival Guide for Women.* BC Network of Canadian Congress on Learning Opportunities for Women (CCLOW). Revised 1995. Distributed by Bonjour Books. Ph: 1-800-665-8002. ISBN 0-9697293-1-6. $12.75 includes shipping.

  Using a first-hand descriptive case study approach, this very readable book looks at a wide variety of issues for women entering or returning to school, including rights, funding, ESL, distance learning, from a personal perspective.

- Rexe, Deanna; Marcia Braundy et al. *Equity in Apprenticeship Resource Kit.* Victoria: BC Ministry of Education, Skills and Training, Apprenticeship Branch, 1996. Distributed by the Open Learning Agency Marketing Department #MN1235. Ph: 1-800-663-1653.

  Vast array of information, audio-visual and print resources and programs about apprenticeship. An essential resource. See Overcoming Barriers unit for review.

- *Sector Council Human Resource Studies.* Ottawa: HRDC 1992-1996.

  Approximately 20 studies on a variety of industrial sectors in Canada (Steel, Electrical and Electronics Manufacturing, Automotive Repair and Servicing, Auto Parts, Environment, Women in Trades and Technology, etc.). Identifies trends and technological issues affecting sectors and what skills are in demand. Lists occupation titles and family groups, describes jobs, education required and employment projections. Very short synthesis found in Chapter 5 and Appendix of *Making Career Sense of Labour Market Information.*

- Province of British Columbia. *The Job Guide.* Victoria, BC: Centre for Curriculum and Professional Development, 1995.

  Profiles hundreds of jobs in a variety of sectors, including growth potential, educational requirements, and personal strengths needed.

- Weinstein, Robert V. *Jobs for the 21st Century.* Toronto: Collier Macmillan Canada, 1983. (See Examine Labour Market Trends and the Impact of Technology on Opportunities in Trades and Technology unit for a review.)

- *"Western Spectrum '95".* Guidance Centre O.I.S.E. Ph: (416) 502-1262 Toll Free 1-800-668-6247 Fax: (416) 502-1101 ISBN 0-7713-0432-3.

  Information on post-secondary education opportunities in the four western provinces.

- Jackson, Nancy (ed), Beckerman, Davis et al. *Training For What? - Labour Perspectives on Skill Training.* Toronto: Our Schools/Our Selves Education Foundation. 1992. 1698 Gerrard St. Toronto Ontario, M4L 2B2. ISBN: C92-095745-5

Internet sites

- A series of Internet sites with links to occupational research information: (Note: Internet sites change frequently. These sites were current as of publication, but it is important for learners to develop effective search skills on the net.)
  - http://hrdc-drhc.gc.ca/hrdc/corp/stratpol/jobs/english/index.html
  - http://www.etc.bc.ca/provdocs/careers/labour.html

  Conduct occupational research using the sites hot linked from this page.
  - http://www.etc.bc.ca/provdocs/careers/library.html
  - http://workinfonet.bc.ca/lmcidb/default.htm (very strong listing of LMI and career resource information from a very wide variety of sources)
  - http://www.workinfonet.ca/
  - http://careerpathsonline.com

Organizations

- Apprenticeship Branch, ministries of Education, Skills and Labour in each province.

  These branches have offices in most cities, with counsellors and pamphlets available for information and assistance. Most provinces have individual flyers on each trade, which describe the work, the entry requirements, the training, and sometimes the process.

Films and Videos

- *Attention: Women At Work.* 29 min. 16mm/video, NFB, 1984. Ph: 1-800-267-7710

  Using a hovercraft pilot, an architect, and two journeywomen carpenters, this film explores women making a success of their unique careers.

- *What About You?* VHS, 19 min. Labour Canada, 1991. Available from local HRD.

  Six women working in trades, technical, and operational (TTO) careers ranging from engineering to television producing talk about their work and the benefits and challenges they have encountered. Mary Oderico, Women's Bureau, Phase II, Place du Portage, Ottawa, Ontario. K1A 0J2. For videos and books, Ph: (819) 994-5571.

- *A Little Elbow Room Please.* VHS, 25 min. HRDC 1992. Fax: (819) 953-7260

  TTO women working and living their lives. Handles overcoming barriers as well as sweet success.

Handout 1

Occupational Research

Sample Questions and Report Requirements

- What trade or technology are you trained in?
- What skills are necessary for this occupation?
- How long is/was the training?
- What was the most important thing you learned during your formal training?
- Please describe your current job. How long have you had it?
- How did you decide which field you wanted to go into?
- What changes have you seen in the occupation since you began?
- Do you have a family? What challenges does this present in relation to your job?
- How much money do you make?
- Have you ever encountered discrimination or harassment? How did you deal with it?
- What do you like best about your work? Least?
- What advice would you give a woman considering this field?
- Can you recommend any other sources of information about this occupation?

Company and occupational profile

Depending on the subject, the report might include:

- company name, address, and phone
- individual interviewed
- job title
- salary range and benefits
- travel and shift requirements
- dress requirements
- equipment owned by the company
- equipment needed for the desired position
- number of employees
- subsidiaries or branches of the company
- type of customers
- job requirements (physical and mental)
- education and training requirements
- projected company growth

- work environment
- areas of particular interest and why reasons for interest
- personal growth potential with the company
- training and upgrading provided by the company
- personal characteristics most valued by the company (and reasons for these)

Other questions to consider

- At what age may a person enter the occupation successfully?
- What is the average age of worker employed in this field? What is the age range?
- Is the ability to meet the public important?
- What is the cost of training? Length of training? Location of training?
- Is union or society membership necessary?
- Are there any costs to the workers (e.g., licence fees, tools, or clothing)?
- How is one's health affected by work in this occupation?
- Is the demand for workers in this field continuous?
- What are the different areas of the occupation available after training?
- Could a worker move to other areas or countries without further training?

Demonstrate Career Decision Making and Follow-Up Activities

LEARNING OUTCOME

Upon completion of this unit, learners should be able to develop a career action plan.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Analyse personal motivation for working and expected returns.	• Ask learners to refer back to the values exercises in the unit, Develop and Apply Problem-Solving Strategies. On a sheet of paper, they should write down why they want to work, what and how much of a role they want work to play in their lives, and what returns they expect to get from working.' Additional exercises for this appear in Section 2 of *Self-Directed Career Planning Guide.* • In small groups, go through the list of "Values: Principles That Guide Our Path" from Section 2 of *Self-Directed Career Planning Guide* and/or the *Bridges to Equity Participant's Workbook,* and highlight those that are most meaningful. Discuss what impact those values might have on career decision making. • Show the film, *You Pack Your Own Chute.* In discussion, have learners answer these questions: In what way is the title a metaphor? What aspects of yourself would be most useful to take along on your career decision-making journey?
• Identify the steps and factors to consider in making an occupational choice.	• Review the Five Steps to a Decision in *The Education and Training Planner,* and/or the six-stage model for "Working Through Your Decision" in Section 4 of the *Self-Directed Career Planning Guide.* Brainstorm and discuss a list of steps and factors necessary to complete a successful career action plan. Include: self-exploration and skills assessment, occupational exploration and research, determination of limiting factors and personal suitability, evaluation of potential choices, determination of training requirements, and local employment potential. • As homework, have learners, using all the information acquired thus far in the course, evaluate which occupations are most likely to meet their needs and expectations, and in which they are most likely to be successful and why. Use the handout, Analysing Your Occupational Alternatives, and the Evaluation Sheet in the *Self-Directed Career Planning Guide.*

Specific Learning Objectives	Teaching/Assessment Strategies
• Analyse occupational alternatives.	• Conduct individual sessions with each learner to go over these evaluations.
• Develop a career action plan.	• Ask learners to formulate a career pursuit action plan that includes: career choice, training plans, financial aid plans, potential employment areas, and follow-up plans, taking into consideration self-assessments, skills transferability, labour market trends, occupational research, etc.

RESOURCES

Books

- Alberta Advanced Education and Career Development. *The Education and Training Planner* . ISBN 0-7732-0608-6, and *The Career Planner*. Edmonton: Learning Resources Distribution Centre. Both revised 1996.
  Ph: (403) 427-5775; Fax: (403) 427-9750. ISBN 0-7732-0606-X. $4.00/copy outside Alberta.

  See Examine Training and Employment Options for review.

- Province of British Columbia. *The Adult Back-to-School Book — Making a New Beginning*. Ministry of Skills, Training and Labour. Victoria, 1994.

  See Examine Training and Employment Options for review.

- Alberta Advanced Education and Career Development. *Job Search—The Product is You*. Workbook and Video. Revised 1996. ISBN 0-7732-0618-3. $5.00/copy outside Alberta.

  This workbook has tools and techniques for choosing and finding employment: self-assessment, identifying occupations and employment and workplace requirements, job leads, networking and résumé writing.

- Alberta Advanced Education and Career Development. *Self-Directed Career Planning Guide*. Revised 1994. ISBN 0-7732-0157-2. $6/copy outside Alberta.

  An excellent tool packed with facts, exercises, checklists, worksheets, case studies, tips, occupational/personality profiles, and strategies.

- Alberta Advanced Education and Career Development. *Career Tip Sheets*. Revised 1994. ISBN 0-7732-0603-5.

  This publication contains 57, three-hole punched clear, useful information-packed sheets covering career and educational planning, employment trends, occupational choice, job search and self-assessment.

- Bolles, Richard Nelson. *What Colour Is Your Parachute?*. A Practical Manual for Job-Hunters and Career Changers. Berkeley, California: 10 Speed Press, 1997.

  Filled with good advice and exercises from someone who has been working in the field for many years. Written in two sections, for those in a hurry, and for those who are taking their time with the transition process. A relaxed perusal turns up many unexpected and useful surprises.

- Bolles, Richard N., and Zenoff, Victoria B. *The Beginning Quick Job-Hunting Map*. Berkeley, California: 10 Speed Press.

- Goldberg, Joan Rachel. *High-Tech Career Strategies for Women*. New York: Collier Books, 1984.

  Chapter 4 (What and Where the Jobs Are) provides useful background material for decision making; Chapter 5 (Getting the Right Job for You) includes some do-it-yourself interest and ability inventories; and Chapter 6 (Getting Your Foot in the Door) has some really valuable how-to points for getting started in the job market.

- Weinstein, Robert V. *Jobs for the 21st Century*. Toronto: Collier Macmillan Canada, 1983.

  Chapter 8 (Curriculum for the 21st Century) looks at the decision choices open today in terms of tomorrow's world.

Internet sites

- A series of Internet sites with links to occupational research information: (Note: Internet sites change frequently. These sites were current as of publication, but it is important for learners to develop effective search skills on the net.)
  - http://hrdc-drhc.gc.ca/hrdc/corp/stratpol/jobs/english/index.html
  - http://www.etc.bc.ca/provdocs/careers/labour.html

Conduct occupational research using the sites hot linked from this page.

- http://www.etc.bc.ca/provdocs/careers/library.html
- http://workinfonet.bc.ca/lmcidb/default.htm (very strong listing of LMI and career resource information from a very wide variety of sources)
- http://www.workinfonet.ca/
- http://careerpathsonline

Films and Videos

- *You Pack Your Own Chute.* VHS, 30 min. By Ramic Productions. ITE, 1978. In BC: MEC.

  This exciting and inspirational film provides a good impetus for making decisions, setting goals, and getting on with whatever is to come next.

Multimedia

- *Knowledge for Youth About Careers.* Order from Project Development Office (Simon Fraser University), Faculty of Education, Burnaby, British Columbia V5A 1S6
  Ph: (604) 291-3808 Fax: (604) 291-3203

  Includes interactive videodisc, a Facilitator Manual, a Facilitator Guide to Scene Playback, a Research and Development Handbook, a Participant Workbook and some posters. A CAMCRY project of the Canadian Career Development Foundation.

Analysing Your Occupational Alternatives[52]

Essentially, the information you have gathered on each occupation falls into two categories. The first category includes information that will help you determine the satisfactions you might expect to obtain from an occupation. The second category includes information that will help you determine your likelihood of success in the occupation. Before you proceed with your analysis, then, you might wish to sort your information on each occupation into these two groups.

What kind of information will help you determine probable satisfactions? Here you might want to look at the facts you have collected on what the work is like. For example, what kinds of tasks would you be doing regularly? Are they varied or almost the same every day? What opportunities are there to be creative, or to do projects on your own? How much responsibility do you have? What kind of supervision can you expect? Are there pressures as a result of deadlines that must be met, or is the work pace fairly moderate?

You probably will want to look at the relationships you will have with other people. For example, will you be working by yourself most of the time, or will you be a member of a team? Will you have contact with only your co-workers, or will you meet other people?

If the physical environment in which you would work is important to you, information about it should be included here. For example, is the work done indoors or outside? Are the surroundings attractive or unattractive? Are there any hazardous conditions you must tolerate? Here you might also include information on the geographic area in which the work is usually done. For example, what is it like to live in these areas? Would you have access to things that are important to you such as shops, theatres, and recreation areas?

Many people obtain satisfactions from the security that a job provides. Therefore, you might want to include facts that you have collected regarding employment trends and the future outlook of an occupation. For example, what is the present demand for workers? Have numbers been increasing in recent years? Is there likely to be much competition for jobs by the time you are ready to begin working? Have changes recently taken place within the occupation? What future changes are likely to take place? How would these changes affect you?

Under possible satisfactions, you will want to examine your information on opportunities for personal growth and advancement. For example, are there training programs that can be taken after you have entered the occupation? Is experience on the job likely to increase your competence? Along what lines may advancement occur? Are there related occupations to which you could move if you so desired?

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[52] From *A Career Planning Guide* by Catherine V. Davison and L. Glen Tippett. Reproduced with permission.

You probably will want to consider the level of income you might expect to receive. You also could include information about possible benefits such as bonuses, pensions, medical plans, stock purchase options, and the like.

Finally, you will want to examine any information you have obtained about the effects of the occupation on the lifestyle of its workers. For example, are workers generally satisfied with the status and respect they hold in the eyes of the community? Does their work help or hinder them in leading fulfilling lives off the job?

What kind of information will help you determine your likelihood of success in the occupation? Here you will again want to examine any facts you have collected on what the work is like. But this time you will want to consider the work in terms of your ability to do it. For example, are the tasks you would have to perform simple or complex? Do they require any special aptitudes, such as the ability to manipulate certain objects quickly? Are you able to cope with special situations that might arise in doing the work, such as meeting deadlines or being very accurate?

You will want to carefully examine your qualifications for entry into the occupation. Here you may include information you have collected on age limits, physical, mental, moral and social requirements, licensing requirements, compulsory union membership, citizenship requirements, etc.

Finally, you will want to consider your information on the type of preparation required. For example, how much general education is required? Is any vocational or professional training required? Do jobs to which you may advance require preparation beyond that needed for entry.

Once you have sorted your information into these two categories, you should be ready to analyse each of your occupational alternatives. There are two ways in which this can be done.

One way is to consider each piece of information you have gathered on an occupation separately. If you have categorized this information under "probable satisfactions," you will want to evaluate how well it meets your expectations. If it is information that you have categorized under "likelihood of success," you will want to evaluate it in terms of what you are capable of doing.

A second way is to work from the results of your personal inventory and any tests, inventories, or checklists you have completed. This time you consider each piece of self-information separately and evaluate the occupation on how well it fits each aspect of you.

Both of these methods of analysing occupational alternatives allow you to assign ratings on "probable satisfactions" and "likelihood of success." For example, if you are a person who will take a lot of risks to get what you want, you can place greater importance on your "probable satisfactions" ratings. On the other hand, if you don't like to take risks, you can place more emphasis on your "likelihood of success" ratings.

When you have rated each occupational alternative, consider whether there are some occupations that you can eliminate. For example, are there some occupations that are not likely to give you what you want from work? Or are there some occupations in which there is a strong possibility that you wouldn't succeed?

If one of your occupational alternatives is clearly better than the others, you should be able to arrive at a single choice without too much difficulty. But suppose that one alternative is good in some ways and another alternative is good in other ways. Or suppose that a number of alternatives seem equally attractive or equally unattractive. What will you do then?

If none of your alternatives appear to be attractive, you will surely consider other courses of action before you finally decide. In other words, you will search for other occupational alternatives on which to eventually base a decision.

In cases where you have conflicts as a result of the attractiveness of several alternatives, there are a number of things that you can do. For example, you can look at the satisfactions you expect to receive from working and rank them in order of their importance to you. Once you have done this, you may be able to arrive at a single occupation and rank the various possible outcomes on the basis of their desirability to you. Once you have done this, you may be able to choose.

Clarify Financial Aid Options

LEARNING OUTCOME

Upon completion of this unit, learners should be able to determine what financial aid options are available to them.

Specific Learning Objectives	Teaching/Assessment Strategies
• Research potential financial aid/scholarship resources.	• Invite a panel of resource people to speak on financial resources and programs available, especially those designed specifically for women seeking training and employment. Try to include representatives from Human Resources Development Canada; Industry Canada; Pathways (Aboriginal training); Ministries of Social Services (rehabilitation and income assistance); Education, Training and/or Labour (Apprenticeship/Employment Training Counsellor); college counsellors, and college Financial Aid Officer. Ask learners to formulate lists of questions to ask the resource people. (See "How will I pay for this?" and "Government Sponsored Training" in *Back-to-School Survival Guide for Women* and "Thinking About Money" from The *Education and Training Planner*.)
	• Invite a female credit officer from a bank or credit union to talk about women and credit.
• Demonstrate ability to complete loan application forms.	• Have learners obtain and fill out loan and financial aid forms. Consider inviting a woman loans officer or financial aid officer to give learners feedback on their forms.

RESOURCES

Software

- *Financial Aid (Choices 95)"*. Order from Careerware (ISM Corporation) 2220 Walkley Road, Ottawa, Ontario K1G 5L2
  Ph: (613) 737-7373 Fax: (613)739-4933

  This computer software is an interactive program about sources of financial aid for students.

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Functioning in the Workplace

UNITS

- Describe Expectations and Responsibilities of Employers and Employees
- Develop Job-Search Techniques
- Describe Small Business Ownership

KEY IDEAS

- Both employees and employers have requirements and expectations that must be met for a successful working situation.
- Effective work habits and communication are essential for maintaining employment.
- Job leads can be generated from some unexpected places; we only have to think of them in the first place.
- A résumé/qualifications brief is often the first impression an employer will receive of you, so make it represent the best of you.

PURPOSE

To prepare learners to enter and function well in the world of work

REQUIREMENTS

This unit requires the completion of the sections, Life Skills and Work-Related Skills.

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Describe Expectations and Responsibilities of Employers and Employees

LEARNING OUTCOMES

Upon completion of this unit, learners should be able to describe:

- ***factors leading to job satisfaction***
- ***employer management structures and expectations***
- ***effective workplace behaviour.***

Note: For those courses where more emphasis will be placed on team building, human relations, and supervisory skills, see the Resources section of this unit.

Specific Learning Objectives	Teaching/Assessment Strategies
• Describe employer management structures and expectations.	• Have learners read Learning Task 1 "Describe Expectations and Responsibilities of Employers and Employees" in *Competency B-1, Outdoor Power Equipment and Motorcycle Service Technician*. Ask them to pay particular attention to "Employer Expectations" and "Employee Evaluation": Are these elements to which you would want to be accountable? Reflect back on the Employability Skills in the Work Experience Unit. Is it possible to evaluate those skills? Will the evaluation questions in this resource be effective? Is there anything missing? Review Part 1 of *Job Search—The Product is You to* check your self-management skills with the skills employers are seeking.
• Analyse the importance of employee job satisfaction to employers as well as employees.	• Ask learners to read the Organization Culture Assessment in *Job Search—The Product is You* and the Developing and Maintaining Positives on the Job section in *Positive Works*. Continue reading in the *Outdoor Power Equipment Learning Guide*, from "Job Satisfaction" to "Handling Workplace Conflict Effectively," looking particularly at the graph that shows that many more people leave their jobs because of difficulties with co-workers than for any other reason. Discuss in small groups the implications of this for workplace behaviour.
	• Revisit the elements leading to job satisfaction developed in the Explore the Position of Women In the Labour Force Unit. See "Finding Job Satisfaction" in *Positive Works*. Analyse the occupations in which you have an interest to see if they match your job satisfaction requirements.
	• In small groups, discuss the impact of job satisfaction issues on such things as productivity, quality of product, working atmosphere, etc.

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Specific Learning Objectives	Teaching/Assessment Strategies
Determine whose responsibility it is to provide the elements that lead to job satisfaction.	Have learners investigate responsibilities of employers and employees as determined by law and union agreements, and make a report to the class.
Describe effective workplace behaviour and work habits for both workers and supervisory staff.	Have learners read Learning Tasks 2 and 3 in *Outdoor Power Equipment and Motorcycle Service Technician;* search the Internet for Ministry of Labour guidelines for Employment Standards and Labour Codes; review collective agreements for learners' chosen occupations, then report to class. Discuss avenues of enforcement.

RESOURCES

Books

- Alberta Advanced Education and Career Development (AAECD). *Job Search, The Product is You.* Workbook and Video. Revised 1996. Edmonton. Learning Resources Distribution Centre. Phone: (403) 427-5775, Fax: (403) 427-9750. ISBN 0-7732-0618-3. $5.00/copy outside Alberta.

  This workbook is packed with tools and techniques for choosing and finding employment: self-assessment, identifying occupations and employment and workplace requirements, job leads, networking and resume writing.

- (AAECD). *Managing Cultural Diversity in the Workplace.* 1994. ISBN 0-7732-0609-4. $4.00 outside Alberta.

  Good how to sections, with tips, on interviewing, employee expectations and responsibilities, communication and training.

- (AAECD). *A Guide for Effective Recruitment and Selection.* 1991. ISBN 0-7732-0159-9. $3.00 outside Alberta.

- (AAECD). *Positive Works* Workbook. 1992. Edmonton. ISBN 0-7732-0604-3. $5.00/copy outside Alberta.

- Province of British Columbia. *Job Seekers Handbook — Marketing your Skills.* Ministry of Skills, Training and Labour. Victoria, 1995.

- Bohnen, Elizabeth and Judy Klie. *Retention: Support Strategies for Women in Trades, Technology & Operations Work.* Toronto: City of Toronto, 1990. Attention: Resource & Publication Centre Ph: (416) 392-7410 Fax: (416) 392-1553

  This inexpensive booklet provides innovative workplace strategies for dealing with training, addressing resistance to change, job supports, accomodations, unions, and supporting the balance between work and family.

- Cawood, Diana. *Assertiveness for Managers: learning effective skills for managing people.* North Vancouver: Self-Counsel Press. 3rd edition, 1992.

  An excellent self-help information and workbook to assist in developing effective communication skills, decision making, goal setting, and action planning.

- Riddle, Dorothy, illus. by Valerie Ward. *Working Together - A Tool Kit for Diversifying Our Work Force.* Human Resources Development Canada. 1996. Ph: (613) 953-7413, or your regional office.

  Developed to assist equity client groups with strategies and practical tools to overcome employment barriers. Divided into three sections - Diversity, Commiting to Work Force Diversity, and Resources Available, the kit provides material that you can apply to many diverse situations. Useful self-tests for assumptions, exploration of differences in communication styles, specific issues for accommodation for each designated group, exploration of action options.

- *Equity At Work: Women In Road Paving.* Toronto: OWD and Sentinel Paving & Construction Limited.

  Recruitment, hiring and retention of women in TTO areas such as road paving, and training and evaluation procedures. Contains an orientation program outline, and provides helpful resources in this area. This book emphasizes that the successful integration of women into blue-collar work means testing the assumptions, the attitudes, the traditions, and the barriers that surround male and female occupations.

- *Employment Equity For Visible Minority Women: A Guide for Employers*". Toronto: OWD and the Urban Alliance on Race Relations - 675 Kings Street W., Toronto, Ontario. Ph: (416) 703-6607.

  Hands-on guide for developing employment equity initiatives for recruitment and integration of visible minority women.

RESOURCES CONT.

- *Employment Equity for Aboriginal Women: Putting Skills to Work.* Ontario Women's Directorate print materials. Ph: (416) 314-0292.
- Hunsaker, Phillip L. and Alessandra, Anthony J. *The Art of Managing People.* New York: Touchstone Books, Simon and Schuster, 1980.

  Information, accompanied by examples and exercises. Contents includes: "Building Productive Managerial Relationships;" understanding learning styles, behavioural styles, decision styles, and transactional styles; "Interactive Communication Skills," and "Interactive Problem Solving."
- Lau, James B. and Jelinek, Mariann. *Behaviour in Organizations: An Experiential Approach.* Third Edition. Homewood, Illinois: Richard D. Irwin, Inc, 1984.

  A comprehensive text with information, assignments, suggested readings, and exercises. A big book and well put together. (For more advanced exploration.)
- *Outdoor Power Equipment and Motorcycle Service Technician Learning Guides.* Province of British Columbia, Centre for Curriculum and Professional Development. Victoria. 1995

  These learning guides build upon earlier competency-based materials and provide good up-to-date descriptive information and self-testing opportunities on both general knowledge issues for tradespeople and specific knowledge issues for those trades. Strong technical and content contributions from Alice MacPherson, motorcycle mechanic, instructor and co-founder of Vancouver Women in Trades.
- Stead, Joanne. *Tomorrow's Builders- An Employment Equity Guide For the Construction Industry,* and *Building For Equality - Practical Tips on Equitable Employment Procedures.* Ottawa: Canadian Construction Association.

  Extremely useful and effective strategies and tips for construction women, employers, and unions.

Films and Videos

- Province of British Columbia. *Your Boss and You.* Victoria: B.C. Learning Connection Inc. (BCLC) 1992. Learning Resources Branch (Customer Service) Ph: (250) 387-5331

  Video and guide dealing with real situations between employer and employee.
- Hurwitz, Cathy, Producer. *Workplace Skills series: Communicating Effectively; Preparing for Employment; Setting Goals; Thinking Creatively.* VHS, 13-17 min. 1992. Ontario: Coronet/MTI Film and Video. Distributed by Magic Lantern: West 1-800-263-1818; East 1-800-263-1717. (See "Develop Self Awareness to Improve Learning Potential" for reviews)

Develop Job-Search Techniques

LEARNING OUTCOMES

Upon completion of this unit, learners should be able to write a résumé or qualifications brief, distribute it appropriately, and participate in a simulated interview.

Specific Learning Objectives	Teaching/Assessment Strategies
• Identify where and how to look for job opportunities.	• Have learners read several issues of Canada Prospects; also read "Finding Work Opportunities" in the *Job Seeker's Handbook;* "Generating Job Leads" and "Electronic Job Search Strategies and Tools" from *Job Search—The Product is You.* Brainstorm a list of where and how to look for job opportunities. Ask learners to elaborate on and explain any that might not be clear. See also "Places to Find Job Openings While Attending School" from "Jobs— Where to Look" in the *Career and Personal Planning 8-12: A Resource for Schools.*
	• Show the video, *Job Search—The Product is You.* Ask learner to discuss which aspects of the job search they feel ready to accomplish. What else do they need?
• Determine appropriate résumé format for specific needs.	• Using resources such as, "Resumes—A Recipe for Success" from *Job Search—The Product is You,* "Marketing Your Skills" from *Job Seeker's Handbook; Don't Use a Resume...Use a Qualifications Brief; The Perfect Resume* (pp. 65-71), make a presentation on types of résumés possible, their component parts, and their uses.
	• Identify types of information that should or should not appear on a résumé.
	• Elaborate in a class discussion on the points that are appropriate and necessary points to include in a résumé, and why some are controversial or inappropriate.
	• Ask learners in small groups to role play scenarios where a number of individual employability skills would be necessary, and demonstrate their effectiveness.
	• Using personal life history, experience, and desired employment, have learners create résumés to be used in applying for the job in which they would be most interested. It is often necessary to encourage learners to use strong, positive statements and active verbs when describing their accomplishments and capabilities. See "Action Verbs" and "the Cover Letter" in *Job Search—The Product is You.* See also "Application Forms" and "Resumes" and "Covering Letters" in *Job Seeker's Handbook.*

Specific Learning Objectives	Teaching/Assessment Strategies
• Create a résumé and letter of application.	• Evaluate and return prepared résumés and letters until each learner has one they can be proud of.
• Complete an application form.	• Read and discuss issues described in Unit 13 of *Bridges Manual and Participant's Workbook,* including "Commonly Asked Interview Questions for TTO Women." Conduct role plays and "worst questions" and constructive feedback exercises.
• Analyse common interview questions and demonstrate appropriate responses.	• Read "Preparing for the Interview" from *Job Search—The Product is You* and/or Interviews in the *Job Seeker's Handbook* and conduct a class discussion exploring the concerns learners may have about the interview process (e.g., anxiety, dress, body language, eye contact, and handshakes; how to handle tough questions, what questions might be improper, how to respond, what questions the learner may want to ask).
	• Form small groups to role play and evaluate practice interviews. Video and playback, if possible.
• Participate in a job finding support group.	• Use *Counsellor's Manual for the Job Finding Club* under Resources for setting up a job finding support group.

RESOURCES

Books

- Alberta Advanced Education and Career Development (AAECD). *Job Search, The Product is You.* Workbook and Video. 34 min, 1993. Revised 1996. $30.00. Edmonton. Learning Resources Distribution Centre. Phone: Ph: (403) 427-5775, Fax: (403) 427-9750. (See "Career Decision Making for review.")
- Province of British Columbia. *Job Seekers Handbook — Marketing your Skills.* Ministry of Skills, Training and Labour. Victoria, 1995.

  British Columbia is developing an Instructor's Manual for this excellent background book on finding job opportunities, resumé writing, and interviewing.
- Bohnen, Elizabeth, Susan Booth and Judy Klie. *Bridges to Equity Program Guide and Trainer's Manual.* Toronto. City of Toronto. 1991. Office of the City Clerk, Resource and Publications, 100 Queen St West, Toronto, Ontario M5H 2N2 Fax: (416) 392-7999

  (See Examine and Apply Guidelines for Goal Setting and Action Planning Unit for review)
- BC Ministry of Education, Skills and Training. *Career and Personal Planning,* Grades 8-12. Victoria, BC. 1995. Open Learning Agency.

  Excellent exercises in the Planning Process and Career Development Activities for Grades 10-12 often are useful with an adult group.
- *Canada Prospects - Canada's Guide to Career Planning.* A Joint Federal Provincial newsprint initiative. Also on the Internet at http://www.globalx.net/ocd

  Well written, humourous, factual and filled with interesting career development information, exercises, challenges and lessons.
- Goldberg, Joan Rachel. *High-Tech Career Strategies for Women.* Toronto, Ontario: Collier Macmillan, 1984.

  Chapter 6, "Getting Your Foot In The Door" makes many useful and practical suggestion for job exploration.
- *Guide to Resume Writing.* Toronto, Ontario: University and College Placement Association, 133 Richmond Street West, Suite 303, Toronto, Ontario M5H 21-3. 1978. Available through Inter-library Loan. (Also available, The Perfect Resume, How to Write Better Resumes, Resumes That Work, etc.)

  An excellent 23-page booklet that covers all aspects of creating several different forms of resumes, covering letters, and job-search techniques.
- Lathrop, Richard. *Don't Use a Resume...Use a Qualifications Brief.* Berkeley, California: 10 Speed Press, 1980.

  Especially good for people who have little pertinent work experience, the qualifications brief is a way of presenting your abilities, competencies, accomplishments, and personal characteristics in a way that can easily spark the interest of an employer.
- Leeds, Dorothy. *Marketing Yourself : The Ultimate Job Seeker's Guide.* Harper perennial Library. 1992. ISBN: 006098418X.
- Mills, Arthur F. *Counsellor's Manual for the Job Finding Club.* Ottawa, Ontario: Advanced Development Division, Employment Support Services Branch, HRDC. Available in Regional Offices.

  Using all the skills developed in this unit and practices that have been successfully implemented all over the country, this manual provides the basic training and background information for counsellors and instructors who wish to help people set up a job finding club - a vehicle that has proven very effective in locating and maintaining employment. The manual includes all of the handouts the Canada Employment and Immigration Commission generally uses in its approach to this tool.

RESOURCES CONT.

- Staller, Jeff. *The High Impact Interview - Taking you inside the hiring process.* Kitchener, Ontario: Resumes First Publishing, 1996. ISBN: 0-9696463-4-8.

  This workbook walks students through the interview process from personal appearance and body language to examples and activity sheets which help to prepare for those difficult questions.

- Staller, Jeff. *The High Impact Resume - Taking you inside the hiring process.* Kitchener, Ontario: Resumés First Publishing, 1995. ISBN: 0-9696463-3-X

  This workbook approaches the task of resumé writing by looking at each part of the resume separately and using example and work activity sheets to help a student prepare their own resume.

- Parker, Yana. *Blue Collar and Beyond: Resumes for skilled trades and services.* Berkeley, California: Ten Speed Press. 1995. ISBN: 0-89815-689-0. Ph: 1-800-841-BOOK

  Highly recommended with over 100 sample resumés.

- Weinstein, Robert V. *Jobs for the 21st Century.* Toronto: Collier Macmillan, 1983.

  Chapter 9, "Marketing Yourself and Planning Job Tactics," Chapter 10, "Mining The Hidden Job Market," and Chapter 12, "Job Hunting Tips" are all valuable resources to this unit, especially for those interested in technologies.

Software

- Ready-To-Go Resumes - Self-Teaching Resume Templates for Mac and PC. Berkeley, California: Ten Speed Press. 1995. Ph: 1-800 841-BOOK

Films and Videos

- *Getting your Foot In the Door* , HRDC. Fax: (819) 953-7260.

- *Job Search - The Product is You.* - VHS, 34 minutes. Alberta Advanced Education and Career Development.

  Case Studies to be used with the workbook of the same name.

- *Communicating Effectively; Preparing for Employment; Setting Goals; Thinking Creatively.* Workplace Skills series. Producer: Cathy Hurtz. Coronet/MTI Film and Video. VHS, 13-17 min. 1992. Magic Lantern Ltd. (West) 1-800-263-1818; (East) 1-800-263-1717.

- *JIST Self Directed Job Search - The Interview, Parts I & II.* VHS 20 min. each. 1995 In BC, available through AEMAC Ph: (604) 323-5217. Magic Lantern. Oakville, Ontario. 1-800-263-1717. approx. $129.

  Part I provides step by step demonstrations on how to do well in a job interview; Part II discussion 10 key problem interview questions and how to formulate a response.

- *Student Workshop - Job Interview Skills.* VHS, 30 min. Sunburst Communications Ltd. 39 Washington Ave, Pleasantville, New York 10570 Ph: (703) 329-7241 Toll Free 1-800-704-1643 Fax: (703) 329-7298 ISBN for guide 0-7805-4109-X. With teacher's guide.

Describe Small Business Ownership

LEARNING OUTCOMES

Upon completion of this unit, learners should be able to describe and analyse the factors necessary for setting up a successful small business operation.

Specific Learning Objectives	Teaching/Assessment Strategies
• Describe the characteristics of an effective entrepreneur.	• Review *The Spirit of Adventure—Entrepreneurship for Canadians.* Brainstorm two lists: personal characteristics and necessary skills.
• Analyse factors to be considered when setting up a small business.	• Conduct a class discussion on a "start up" checklist for small business, identifying: economic conditions, market for product, business advisors, personal characteristics and skills necessary for success, corporate structure, business plan, marketing plan, cash flow plans, sufficient financial resources, time frames. • Invite a resource person from the Business Development Bank of Canada (formerly called the Federal Business Development Bank) to speak to learners on the subject. • Invite a panel of local women entrepreneurs to address the group. Try to ensure that there is a broad cross-section of lifestyle experiences represented. • Have learners make journal entries that analyse their personal suitability for entrepreneurship and their capacity for setting up a small business. They can then list the educational workshops needed to assist in setting up a small business. Encourage learners with experience in this area to share with others.

RESOURCES

Books

- Alberta Advanced Education and Career Development. *Entrepreneur: A Big Word for Small Business.* Annotated Bibliography. Edmonton: Learning Resources Distribution Centre. Ph: (403) 427-5775, Fax: (403) 427-9750. $4.00 outside Alberta.
- Canadian Bankers Association. *Financing a Small Business - Working With Your Bank.*
- *Minding Your Own Business, Becoming an Entrepreneur.* Ottawa: Human Resources Development Canada, 1995. Available through Enquiries: (819) 953-7260.

  This booklet covers start-up, home-based and other types of businesses. It is designed to help you decide if running your own business is a realistic career choice.
- The Federal Business Development Bank has many resources and handouts of use to this unit.
- Province of B.C. *Women in Business Start Up Kit, Women In Business - Your guide to Starting a Small Business, Factsheets.* Victoria. Ministry of Small Business, Tourism and Culture. 1993. Contact Communications Ph: (250) 387-0225.

  Information, checklists and resources, laid out in a workbook style.
- Province of B.C. *Resource Guide for British Columbia Businesses - Guidelines Affecting Your Business.* Ministry of Small Business, Tourism and Culture. 1995, Contact Communications Ph: (250) 387-0225.

  In depth information on business licenses, corporate structure, labour requirements, federal requirements and many other details. Similar booklets might be available in other provinces.
- Province of B.C. *"Business Planning and Cash Flow Forecasting - For Small Businesses".* Victoria: Ministry of Small Business, Tourism and Culture. ISBN 0-7726-2590-5.
- Province of B.C. *Home-Based Business Manual - Starting Your Home-Based Business.* Ministry of Small Business, Tourism and Culture. Victoria 1992. Contact Communications Ph: (250) 387-0225.

  A superb resource which details everything from filing systems, business records, equipment needs; Research and Planning; Marketing; Finances; Operations and Managing Your Business.
- Rabbior, Gary and Jim Lang. *Entrepreneurship for Canadians - The Spirit of Adventure.* Canadian Foundation for Economic Education. Ph: (416) 968-2236.
- Rabbior, Gary, *Catching the Wave.* Canadian Foundation for Economic Education. Ph: (416) 968-2236. Available through the Environment Industry Sector Council. Ph: (403) 233-0748 ; & Logistics Ph: (416) 363-3005

Films and Videos

- *A Web Not a Ladder.* VHS, 24 minutes. National Film Board of Canada (Studio D and Regards de Femmes) in collaboration with the Federal Women's Film Program. Montreal: NFB. Bonnie Dickie, Director. 1993. Ph: 1-800-267-7710 Closed-captioned for the hearing impaired.

  Designed to inform and inspire women who want to start a small business, this film presents stories and advice from six successful businesswomen.
- Liberson, Donna. *Minding My Own Business.* VHS. Thirteen 24-minute programs: Inspiration and Motivation; Planning; Financing; Marketing; Managing; Evaluating; The Retail Business; Manufacturing and Distribution; The Homebased Business; The Service Business; Professionals in Business. Vancouver: Liber Films. Ph: (604) 253-0135; Fax: (604) 253-4216.

  Upbeat and entertaining videos which draw on the real life experiences of Canadian businesswomen and map out a series of steps for establishing and operating a successful business.

- *What If?* VHS, 16 minutes. Etobicoke, Ontario: Women Inventor's Project. 1990.
  1 Greensboro Drive, Ste 302, Etobicoke,
  Ontario M9W 1C8. Also available in French.
- *Women Inventors*. VHS, 16 minutes. Etobicoke, Ontario: Women Inventor's Project. 1988.
  1 Greensboro Drive, Ste 302, Etobicoke,
  Ontario M9W 1C8.

  Seven Canadian women inventors and entrepreneurs are profiled.

Organizations

- Women Futures Community Economic Development Society. 217-1956 West Broadway, Vancouver, British Columbia. Ph (604) 737-1338.
- Women and Rural Economic Development.
  379 Huron Street, Stratford, Ontario, N5A 5T6.
  Ph: 1-800-790-9949. Fax: (519) 273-4826.
  http://www.sentex.net/~wred
- Mentorship, business start-up assistance, loan funds, support and training services, small business seminars are all a part of what is offered through these organizations.

Rights and Obligations

UNITS

- Explore Rights and Obligations in the Workplace
- Examine the Issues of Employment Equity/Affirmative Action/Workplace Diversity

KEY IDEAS

- Human rights legislation can be a very useful tool and protection for members of groups who are discriminated against.
- All workers have some basic rights, which are covered by employment standards legislation.
- The rights and responsibilities of union and non-union workers can be different and are protected under different legislation.
- Employment Equity/Affirmative Action is an issue that has been researched and explored over a long time, and both unions and governments have acted in response to it.
- New federal and some provincial legislation has opened many jobs to women, especially in trades and technology work.
- Employment Equity/Affirmative Action is a complex issue about which there are many diverse opinions and positions. It is useful to understand the opinions of others and to formulate your own opinions.

PURPOSE

The purpose of this topic is to prepare learners to be good employees in the workplace, as well as to help them understand available resources in case of difficulties, which could be the result of ignorance or discrimination. Secondly, it is important to understand the kinds of legislation that can assist or affect our working lives.

REQUIREMENTS

This topic requires a willingness to participate tactfully in discussion on controversial issues.

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Explore Rights and Obligations in the Workplace

LEARNING OUTCOME

Upon completion of this unit, learners should be able to identify appropriate hiring and employment practices, in relation to current legislation and regulations.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Investigate current human rights legislation and practices.	• Read and discuss "Describe Workplace Legislation" Learning Tasks 2 and 3 in *Outdoor Power Equipment*. What issues are covered by the Provincial Labour Code? In what circumstances does the Federal Labour Code apply? Under what category do health and safety provisions apply? Discrimination cases? Harassment? What are the avenues for dealing with problems? • Invite a speaker from the Human Rights Council to make a presentation on legislation in regards to hiring, firing, working conditions, the kinds of precedents that have been set, and how to file a complaint.
• Analyse the rights and responsibilities of employers and employees under current labour standards legislation.	• Prior to a presentation on human rights legislation, ask learners to create scenarios that highlight human rights issues of concern to them as workers, and develop specific questions for speakers. • Invite a speaker from the Employment Standards Branch to make a presentation on rights and responsibilities, including the Workers' Compensation Act, Employment Insurance, Pension Plan contributions, etc. This could be amalgamated with the previous activity and a panel formed. Again, specific questions from learners would be useful, as well as an analysis of the benefits and the drawbacks of current legislation. • Show several of the following videos, *Workers Without Unions; Workers in Unions; Celebrating the CAW: 10 Years of Social Unionism; The Two-Edged Sword: CAW and the New Technology; Working Lean*. Discuss benefits and drawbacks of unionized labour: - What has been won? - What has been lost? - What are the intangibles? - Have learners search the Internet for discussion and information on this subject. - In what way are women participating in the discussions? Why?

- Read "Why Unions?" from *The Piledriver Apprentice and The Trade*, and discuss the Truth or Myths. As a class, brainstorm a set of your own understandings of what are the myths and realities of union and non-union membership. Why are unions necessary? What are the benefits and drawbacks of union membership? How do unions and employers work together? How do they conflict?

- What impact do unions have in ensuring safety? Training? etc. Invite a panel of tradeswomen, female technologists, and female union representatives to talk about their experiences in both sectors. Ask learners to prepare questions ahead of time and provide these to panel members at least a week in advance.

RESOURCES

Books

- Northern California Piledrivers Joint Apprenticeship and Training Committee. *The Piledriver Apprentice and the Trade.* Carpenters 46 JATC. 5th Edition, 1992.

  A well-done learning guide that covers the responsibilities of the construction industry and organized labour, benefits, entitlements, history of the union movement, and what it is today.

- *Outdoor Power Equipment and Motorcycle Service Technician Learning Guide* B-1. Province of British Columbia. Victoria, 1995. Available from the Open Learning Agency. Ph: 1-800-663-1653.

  Succinct learning guide of expectations and responsibilities of employers and employees, legislation affecting workers, and legislation affecting employment, with self-tests.

- White, Julie. *Women and Unions.* Ottawa, Ontario: The Canadian Advisory Council on the Status Of Women, Canadian Government Publishing Centre, Supply and Services, 1980.

  A major historical, factual analysis of women and unions.

- *Women Of Steel— A Six-Day Leadership Development Course For Women In The Labour Movement.* Toronto: OWD and the United Steelworkers of America - 234 Eglinton Avenue E. Toronto, Ontario (416) 487-1571 - for $70.15 plus GST. Available for unions at a cost of $32.71 plus GST.

  Training manual for a six-day leadership development course for women in the labour movement. The course is designed to encourage women to run for and move into leadership positions in the labour movement. The workshop kit includes extensive trainer's notes, participant handouts and sample agendas. It is designed for use by women throughout the labour movement and in other community or organizational settings.

Films and Videos

- Canadian Auto Workers. *Celebrating the CAW— Ten Years of Social Unionism.* VHS, 58 min. Toronto: Canadian Auto Workers, 1995. Ph: (905) 495-4110; Fax: (905) 495-6552.

  A look at unionization in Canada from 1934 to 1995: the struggles, the issues, the government and industry influences, and the workers. A bit long, but with some good information and issues for discussion. Some violence-in-media coverage of events.

- Canadian Auto Workers. *Working Lean.* VHS, 58:32 min. Toronto: Canadian Auto Workers. 1993. Ph: (905) 495-4110; Fax: (905) 495-6552.

  An examination of the implementation of "working smarter" and the introduction of new technology. Looks at the impact on workers, health and safety, social organization of work, etc. Union perspective, with room for discussion.

- *The Two-Edged Sword: CAW and the New Technology.* VHS 24:30 min. Toronto: CAW. 1993.

  A balanced look at the pros and cons of a variety of technological change across the industries covered by the Canadian Auto Workers: auto manufacturing and parts, transportation (air/rail), etc. Highlights the importance of worker input at early stages to ensure success.

- *Workers Without Unions.* VHS, 18 min. Vancouver: PLS, 1982. Available college resource centres.

  This program explains the basic employment rights of BC's non-unionized employees as set out in the Employment Standards Act. The program examines minimum wage, salaries, vacations, and vacation pay, as well as statutory holidays and maternity leave.

RESOURCES CONT.

- *Workers in Unions.* VHS, 25 min. Vancouver: PLS, 1982. Available in college resource centres.

  Focusing on the rights of unionized workers under the Labour Code, this program examines the legal basis of labour relations in BC. It covers the Code's provisions regarding the creation and purpose of unions, collective bargaining, negotiating a contract, and the use of picketing and lockouts in labour disputes.

Organizations

- Human Rights Councils and Commissions in each Province and Territory. Information available on the Internet in many cases.

  These organizations will often provide speakers and information pamphlets upon request. Pamphlets include the Annual Report, which has in it the Act, the activities of the Council, recent and significant precedent-setting decisions; a Hiring Guide; an Employer's Guide; and a Human Rights Newsletter.

- Employment Standards Branch of each Province and Territory.

  These are mediation and enforcement agencies for employment standards legislation. They have local offices in many cities.

- Unions, Federations of Labour and non-union activists will often have educational material that can be researched.

Examine the Issues of Employment Equity/Affirmative Action/Workforce Diversity

LEARNING OUTCOME

Upon completion of this unit, learners should be able to describe the pros and cons on the issues of Employment Equity/Affirmative Action/Workforce Diversity.

Note: It is useful for the learners to articulate their own positions, as any decisions or legislation on these issues will ultimately affect their lives.

Specific Learning Objectives	**Teaching/Assessment Strategies**
• Identify the principles, practices and differences of employment equity, affirmative action and workforce diversity.	• Using the outline, exercises and overheads of *Employment Equity in Canada - A Workshop Designed for WITT Women*, introduce the concepts and highlight potential practices of Employment Equity. • In discussion groups, examine the following statement: "Sometimes Employment Equity means treating people the same despite their differences, sometimes it mean treating them as equals by accommodating their differences."[53] Engage in a class discussion to compare and contrast the terms Employment Equity, Workforce Diversity, Affirmative Action. What are the similarities and differences?
• Describe the current provincial and federal legislation affecting employment equity.	• When are the different terms used, and why? What would be the differences in the implementation activities for each term? Using the Internet and other sources, have pairs of learners investigate the current provincial and federal EE legislation and make presentations on the results of their research.
• Describe the Employment Equity Process	• Using overheads provided in *Employment Equity in Canada - A Workshop Designed for WITT Women* present and discuss the stages and steps of preparing the workforce, conducting workforce analysis and employment systems review, creating an EE plan, and monitoring. Using material generated from the EE workshop, compare and contrast the "special measures" described, ie Remedial, Support and Reasonable Accommodation, and the measures discussed in the Handout: Making Affirmative Action Work. - How many specific ideas can you identify in each special measure category? - What kinds of situations might arise where a special measure was necessary? - Which description makes it easier to generate ideas? Why?

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[53] Quoted by Rosalie Abella in the Royal Commission on Equality in Employment.

Specific Learning Objectives	**Teaching/Assessment Strategies**
- Analyze the impact and effectiveness of Employment Equity/Affirmative Action.	- Ask learners to outline the principles and significant issues of Employment Equity/Affirmative Action, making a presentation to the class on how the current legislation addresses them. Use the *Report of the Royal Commission on Equality In Employment*, partially reproduced in the Handout: Making Affirmative Action Work; the Internet; and Canadian Bill C-64 as the basis for the presentation. Who calls it by these different names? Why? What are the reasons this legislation was passed? Does it effectively respond to those concerns? What are its greatest benefits? Drawbacks? Other than the Federal legislation, which Provinces have EE programs? - Conduct a class discussion, or a formal debate, with learners researching the issues and suggesting or taking positions. Answer such questions as: - In what way does this legislation assist or hinder women's successful integration into trades and technology work? - What more could be done to achieve the goal of successful integration of women in trades and technology?

RESOURCES

Books

- *A Matter of Fairness.* Ottawa: Report of the Special Committee on the Review of the Employment Equity Act. May 1992. HRDC or your MP.
- Aach, Hana. *Unions and Affirmative Action: A Discussion Paper.* Prepared for the Canadian Labour Congress Women's Bureau. Ottawa, Ontario, 1983.

  Analyses and describes affirmative action policies of provincial federations of labour, describes the issues behind the measures, and looks specifically at the Saskatchewan experience, where they have signed agreements between the Public Service Commission and the Government Employees Union. It also includes a survey of union members at a national conference on equality, which was one of the precipitants of affirmative action within the labour organizations themselves.
- Abella, Judge Rosalie Siberman. *Report of the Royal Commission on Equality in Employment.* Ottawa, Ontario: Canadian Government Printing, Supply and Services Canada, 1984.

  The most in-depth document available on the analysis of Canadian experience, needs, and recommendations for Employment Equity/ Affirmative Action.
- Bill C-64 (the Federal Employment Equity Act of 1996) and the Canadian Human Rights Act.

  Bill C-64 is the amended legislation that was written as a result of the Abella Commission Report and together they represent the only federal legislation in effect. Several provinces have their own pieces of legislation. Both publications are available from Canada Government Printing and Canada Human Rights Commission.
- *Equality in the Workplace - An Affirmative Action Manual.* Ottawa: Canadian Union of Public Employees (CUPE) Education Department. 1989.

  A comprehensive guide to implementing Employment Equity in the Canadian workplace.
- *Equity At Work: Women In Road Paving.* Toronto: OWD and Sentinel Paving & Construction Limited.

  Recruitment, hiring and retention of women in TTO areas such as road paving, and training and evaluation procedures. Contains an orientation program outline, and provides helpful resources in this area. This book emphasizes that the successful integration of women into blue-collar work means testing the assumptions, the attitudes, the traditions, and the barriers that surround male and female occupations.
- *Employment Equity For Visible Minority Women: A Guide for Employers.* Developed by the Ontario Women's Directorate and the Urban Alliance on Race Relations. It is available through Urban Alliance on Race Relations - 675 Kings Street W. Toronto, Ontario (416) 703-6607.

  This informative, hands-on guide for developing employment equity initiatives was designed to assist in the recruitment and integration of visible minority women.
- *Employment Equity for Aboriginal Women: Putting Skills to Work.* Produced by and available through the Ontario Women's Directorate - 2 Carlton Street, 11th Floor, Toronto, M5B 2M9 Ph: (416) 314-3988 Fax: (416) 314-0256.
- Human Resources Development Canada. *Employment Equity: a Guide for Employers; Employment Equity: Facts and Fiction; The Employment Equity Act of 1996; Creating a Diverse Workforce; Conducting a Workforce Survey.* See also Internet Web sites for HRDC and Provincial Ministries.
- *Making Affirmative Action Work.* Ottawa, Ontario: Canadian Labour Congress Women's Bureau, 2841 Riverside Drive, Ottawa, K1V 8X7, 1985. Available from the CLC.

  Originally published as a resource to a national conference on affirmative action, this document describes the different forms of discrimination, what affirmative action programs are, the

RESOURCES CONT.

measures necessary for a productive program, how employment discrimination affects women, and some of the steps that must be taken to achieve equity, as well as the various pieces of legislation that can have an impact on it. An excellent publication.

- Statement on Women and Affirmative Action. Toronto: Ontario Federation of Labour Women's Committee, 1982.

  This statement was presented and passed at the 1982 Canadian Labour Congress annual national convention. It is three pages of clear analysis and recommendations on why and how to deal effectively with the issue.

- Stead, Joanne. *Tomorrow's Builders- An Employment Equity Guide For the Construction Industry*, and *Building For Equality - Practical Tips on Equitable Employment Procedures*. Ottawa: Canadian Construction Association.

  Extremely useful and effective strategies and tips for construction women, employers, and unions.

- *Teaching Cases In Employment Equity*. London, Ontario: OWD and the School of Business Administration/ University of Western Ontario. Available through the University Publication Service. Photocopies available for $3.50 each. Ph: (519) 661-3208, Fax: (519) 661-3382.

  A folio of teaching cases for use in business administration courses and in organizations' internal training and management-development programs. Each case is based on actual employment equity issues that have been faced by London Life, Du Pont Canada, Westinghouse Canada and Four Seasons Hotels.

- WITT National Network. *Employment Equity in Canada - A workshop designed for WITT women*. London. 1996. Ph: (519) 453-2105 Fax: (519) 453-2087.

  A current and detailed exploration of issues, policies and practices surrounding employment equity. Includes overheads, handouts and HRDC publications: EE: A guide for employers; and EE: Facts and Fiction.

Films and Videos

- *Affirmative Action - What It's All About*. Canadian Auto Workers. (416) 497-4110 Fax: (416) 495-6552.
- *Employment Equity: Not Just A Foot In The Door*. Toronto: Ontario Federation of Labour (OFL)/OWD. 1994. Available from OFL - Human Rights Division. 15 Gervais Drive, Don Mills, Ontario. M3C 1Y8. Ph: (416) 441-2731, Fax: (416) 441-0722.
- Canadian Auto Workers. *Call Me Sister Call Me Brother*. E/F 1993. Available from CAW/TCA Phone: (416) 497-4110 Fax: (416) 495-6552.

FORMS OF DISCRIMINATION

There are two forms of discrimination: direct discrimination and systemic discrimination.

Direct discrimination

Discrimination is direct (or overt) when an individual or group is treated differently because of their sex, or for one of the grounds that are prohibited by statute or under a collective agreement. This form of discrimination may be intentional and a result of bad faith, but it may also grow out of prejudice and ignorance. For example, an employer who believes that women have no aptitude for mechanics will tend not to hire female mechanics. Today, however, it is rare for an employer to admit openly that it does not hire women, pregnant women, or members of a visible minority. The employer will find some pretext on which to reject them.

Systemic discrimination

Systemic discrimination is the result of employment policies or practices that have the result of excluding women, although this may not be their intent.

The concept of systemic discrimination developed through an awareness of the fact that although discrimination on the basis of sex was prohibited by statute and under collective agreements, the status of women was not improving significantly. At this point, investigations were undertaken into the structure of employment systems. The conclusion was that there are various practices or policies relating to employment that appear to be non-discriminatory, but that have discriminatory effects for women.

At this point, the intentions of the employer are of little importance. What matters are the results. If there are no women employed by a business other than in the offices, there is a presumption of systemic discrimination. Such discrimination may be caused by arbitrary hiring criteria, by requirements that are not related to the job itself, by equipment that is not adapted to women's body size, and so on. In short, systemic discrimination is the result of obstacles that deny women access to the same jobs, pay, and working conditions as men.

WHAT ARE AFFIRMATIVE ACTION PROGRAMS FOR WOMEN?

In its policy paper on affirmative action for women, the Canadian Labour Congress defined affirmative action as a comprehensive program designed to overcome past and present discrimination; this would include:

- non-discriminatory hiring and promotion practices
- equal pay for work of equal value
- training opportunities
- paid education leave
- childcare
- parental leave
- measures against sexual harassment
- accumulation of seniority during leave.

In Canada, the acknowledgment that women make up a group that has historically and systemically been discriminated against has give rise to the concept of "affirmative action." In fact, affirmative action programs are aimed at eliminating direct discrimination and systemic discrimination. Ultimately, they are aimed at giving women access to all jobs, revaluing traditional jobs, and thus improving their economic situation.

Three Types of Measures

A true affirmative action program includes three types of interrelated measures: permanent measures, remedial measures, and support systems.

Permanent measures

Permanent measures are measures that will operate to eliminate all discriminatory aspects of practices related to employment. These measures will have the result of giving a new value to the work "normally" performed by women, and of giving women real access to all jobs. We say that these measures are permanent in that they must be in operation from now on, just as they should always have been in operation. These measures put all individuals on the same footing. No one is discouraged or prevented from performing a job or taking a position because of his or her sex. Some of these measures are already included in our collective agreements (e.g., application of the principle of equal pay for work of equal value, sexual harassment clauses).

Remedial Measures

Remedial measures are designed to correct the effects of past discrimination. These measures are based on the principle that if women had not suffered discrimination they would be present in all occupational categories and earn the same wages as men. These measures are therefore aimed at restoring the balance. For a certain period only, men and women must be treated differently in order to achieve a result of fair representation of men and women in all spheres of employment. For this reason, we refer to these measures as limited and temporary: they last only for a certain period of time. For example, it may be a matter of hiring women in areas where they are under-reperesented. If twenty bus drivers are to be hired in the next two years, provision might be made for one-third of these to be women.

Support Systems

The debate surrounding equality will remain theoretical if nothing is done, for example, to assist parents in balancing responsibilities to family and work. Such measures are therefore intended to create an infrastructure so that we can attain our objective: equality. They may be in the form of childcare, work schedules adapted to school timetables, and so on.

Targets and Timetables

It is essential to establish quantitative targets and timetables to achieve equality within a reasonable period of time, as well as to conduct periodic analyses of the progress made.

Appendix A

National Generic Standards and Program Development Guidelines

for WITT Courses, Exploratory Courses for Women in Trades, Technology, Operations and Blue Collar Work and for Trade/Technology Specific Courses for Women

Preamble

The aim of this course is the empowerment and skill training of women through facilitative instruction using methodologies appropriate to their learning styles. As we recognize the need of our society to handle the complex training and working environments, we must provide students with the tools to analyse and effectively deal with both technical problems and the effects of a society that has tended to discriminate on the basis of race, gender, age, disability, and sexual preference, particularly in the performance of trades and technical work. Special skills and tools are needed in these cases. Within the context of the following goals and objectives, we hope to provide the tools to use in all applications, both technical and societal, to enable the students to survive, and thrive in the trades and technical environments in which we hope to find many of them. The following material was developed through a modified Dacum process involving technical training and women's technical training experts from eight provinces in Canada.

Program Goals

1. Increase the employment and further training/education potential of participants, especially in trades, technology, operations and blue collar work. (TTO/BCW)
2. Provide participants with the opportunity to explore a broad range of employment and training options in TTO/BCW,
3. Provide participants with a realistic understanding of the physical, emotional and academic requirements of training and/or employment in TTO/BCW,
4. Provide participants with a series of empowering skills which will assist them in becoming competent workers in TTO/BCW.

Objectives

Participants will:

1. Acquire knowledge of the range of possible occupations in TTO/BCW
2. develop strategies for dealing with the multiple roles of working women
3. apply practical math, science, workplace literacy, and communication skills in TTO/BCW studies
4. develop basic technical skills in a wide range of TTO/BCW
5. make informed career occupational choices through knowledge of the labour market, skills in career planning and job search techniques
6. realistically assess their own ability to work successfully in TTO/BCW environments through hands-on work experience in industry
7. develop occupational fitness skills
8. develop skills to work effectively in groups
9. enhance self-esteem, self-confidence, and self-motivation through the group process and an interactive learning environment

Methodology

1. Feminist Perspective

   Defined by the WITT National Network as "moving towards equality of women by accommodating differences - e.g. economic, social, racial, political, physical and cultural."

2. Practice Effective Adult Learning Principles

   Voluntary Participation (Adults decide on a course of action to meet their own needs); Mutual Respect (the variety of past experiences must be recognized and built upon); Collaborative Spirit (the facilitator and participants need to agree upon needs, objectives, methods and evaluation); Action and Reflection (Praxis) (by doing something and then taking the time to reflect upon it, individuals will process information into something which has meaning for themselves); Critical Reflection (a

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critically aware frame of mind will assist in analysing the culture and philosophical basis of their education); Self-direction (to foster the feeling of empowerment in participants). This material was synthesized from *Understanding and Facilitating Adult Learning* by S.D. Brookfield, Milton Keynes, England: Open University Press (1986), and from *Adult Characteristics and Effective Learning Principles* (March 1990), by Janis McKeag.

3. Respect Learning Styles & Use Appropriate Teaching Strategies

   Lecture/readings; demonstration, practice; discussion; participation; role models; tours; multi-media; work experience in industry. See *Instructor's Handbook: Working with Female Relational Learners in Technology and Trades Training* by Carol Brooks, Ph.D., Ministry of Skills Development Ontario (1986) and *Orientation to Trades and Technology: A Curriculum Guide and Resource Book with a Special Emphasis on the Needs of Women* by Marcia Braundy, Ministry of Advanced Education, Training and Technology, British Columbia (1987).

Student/Instructor Ratio

For a 35/hr per week course, for a course of 16 students, 2 full time - 35/hr per week positions. This can be allocated among several instructors, but the importance of having some continuity for the coordinator/instructor must be stressed.

Female tradespeople and technologists make excellent role models, and should be used as coordinators/instructors whenever possible, as well as resource people in the classroom.

Funding

Courses should be funded under direct purchase, or within college base budgets allowing a broad cross-section of EI, SARS, CJS/mainstream and fee-paying students. Most effectively, these courses would be funded on a regular ongoing basis to provide continuity and support for students and instructional personnel.

Entry/Selection Criteria

Depending on your available course length, a coordinator must set minimum academic standards for math, science, reading and writing skills. Instructors/Coordinators must show some flexibility, weighing such factors as motivation and interest.

It is important to provide informational sessions during the recruitment phase using questionnaires (samples available at national office), and interviews so that instructor/coordinators, working with Advisory Committee members, can select students on the basis of commitment, interest, and motivation. Instructors have the right to terminate any student not living up to learning contract.

Women Training with Women

The need for women-only exploratory courses must be stressed. Gaining skills and confidence in cooperative/supportive environments will enable them to then be successful in mixed courses where women are expected to compete with men who have often had greater prior experience in the field.

Expected Outcomes

Entering further technical or other training is as satisfactory an outcome as finding full-time paid employment because it will lead to better-paying jobs with greater potential for advancement in the long run. This is an exploratory course.

Recommended Industrial/Technological Sectors for WITT Courses

- Power & Energy
- Manufacturing
- Construction
- Transportation
- Communications
- Environment
- Natural Resources
- Research & Development
- New Technologies

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Time Frames

The time frames outlined here are for courses where the students have, for the most part, basic Grade 10 education and English as their first language. For those courses where more extensive math, science or English upgrading or English as a Second Language training were necessary, the time frames would have to be modified appropriately.

A minimum of 3 weeks lead-time and 2 weeks follow-up are necessary to ensure positive negotiations and scheduling with area employers and unions, other technical instruction personnel, potential role models and resource people from the community and government agencies, and preparing evaluations of program and assisting students with realizing their training and employment objective.

The most-effective way to run these courses is in an ongoing fashion, so that continued follow-up and support for students is possible, or to ensure there is an individual identified to play that role for students and graduates on a regular basis.

Minimum:

5 weeks lead and follow-up + 20 weeks (Grade 10 and English first language)

Maximum:

5 weeks lead and follow-up + 40 weeks

Average Course:	**Minimum**
Professional Development	3 Weeks
Occupational Health and Fitness	3 Weeks
Technological Literacy	2 Weeks
Handle Work Related Issues	1 Week
Shop Time	8 Weeks
Communications	2 Weeks
Career Exploration & Development	1 Week
Work Experience	4 Weeks
	24 Weeks

Trade/Technology Specific Courses

All graduates of trades/technology specific courses as well as WITT exploratory courses must have taken the skill units described here. If they have done so prior to participation in the course, some accommodations can be made in course content or participation.

Supplementary Materials

WITT National Network will be reviewing available Canadian course outlines and curricula, and will be making recommendations re those which most effectively meet the guidelines decided upon by the national WITT Dacum Advisory Group. Please contact the WITT National Network office for further information and resources: WITT National Network, 10 Douglas Court, Unit 2, London, Ontario N5W 4A7, Phone: (519) 453-2105, Fax: (519) 453-2087, E-mail @info@wittnn.com

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National Standards for Generic Content for WITT Courses
Exploratory Courses in Trades, Technology, Operations and Blue Collar Work for Women

1 Professional Development	Develop and use assertive skills.	Identify and manage responsibilities & requirements of home and work.	Identify/ determine personal support systems	Identify personal strengths, talents, skills and abilities.	Apply effective stress management techniques.	Identify barriers to and steps to encouraging trust.	Apply effective conflict resolution techniques.	Apply effective problem solving techniques	Use self defence skills.	Identify cultural differences.	Recognize contributions of other cultures.	Define and describe implications of racism, sexism, heterosexism and discrimination.	Clarify personal goals
	Identify and respond appropriately to societal barriers.	Practise appropriate nutritional habits.	Use time managements skills.	Use appropriate personal hygiene.	Identify and respond appropriately to harassment.	Recognize addictive behaviour.	Apply effective decision making skills.	Budget.	Identify "community resources".	Manage crises.	Set goals (individual).	Dress appropriately.	Practice motivational techniques.
2 Occupational Health and Fitness	Identify occupational requirements for fitness.	Describe WHMIS.	Demonstrate appropriate workplace physical techniques.	Assess personal physical condition.	Develop and implement personal fitness plan.	Develop hand/eye coordination and dexterity.	Use safe work practices.	Operate fire protection equipment.	Describe occupational health and safety regulations.	Use personal protective and safety equipment.	Use first aid techniques.		
3 Work Related Skills	Recognize tools and their functions.	Use appropriate hand & power tools & equipment.	Use cutting, fitting and fastening techniques.	Use drafting skills.	Use lay-out and measuring techniques.	Interpret blueprints and schematics.	Identify and use materials and supplies	Evaluate end-product.	Use diagnostic testing techniques.	Use trouble-shooting strategies.			
4 Handle Work Related Issues	Describe the status of women and work	Describe the history of women in work and society.	Describe current human rights legislation.	Describe labour standards.	Describe workplace culture.	Describe the function and structure of unions (general)	Access appropriate unions.	Describe apprenticeship and apprenticeship programs.	Define sexual [and other] harassment.	Describe employment equity legislation and its local impact.	Identify pay equity issues.	Assess compliance with training plan.	
5 Acquire Technological and Workplace Literacy	Apply trades and technical theory in a variety of occupations.	Use critical/ analytical techniques.	Use basic computer skills.	Interpret technical manuals.	Use appropriate terminology.	Apply appropriate math skills.	Apply appropriate science skills.						
6 Career Exploration & Development	Analyze labour market	Identify transferable skills.	Identify training options.	Assess risks involved in implementing career choices.	Use job search skills.	Evaluate institutional training environment.	Develop a career plan.	Evaluate the course work experience component.					
7 Use Communication Skills	Use effective listening skills.	Identify and use effective verbal communications skills.	Give and receive feedback.	Use gender inclusive language.	Identify and interpret non-verbal communication behaviours.	Identify different communication styles.	Identify assumption.	Use electronic communication equipment.	Work effectively in a group.	Use research techniques.	Write effectively.	Read effectively.	Use study skills.

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